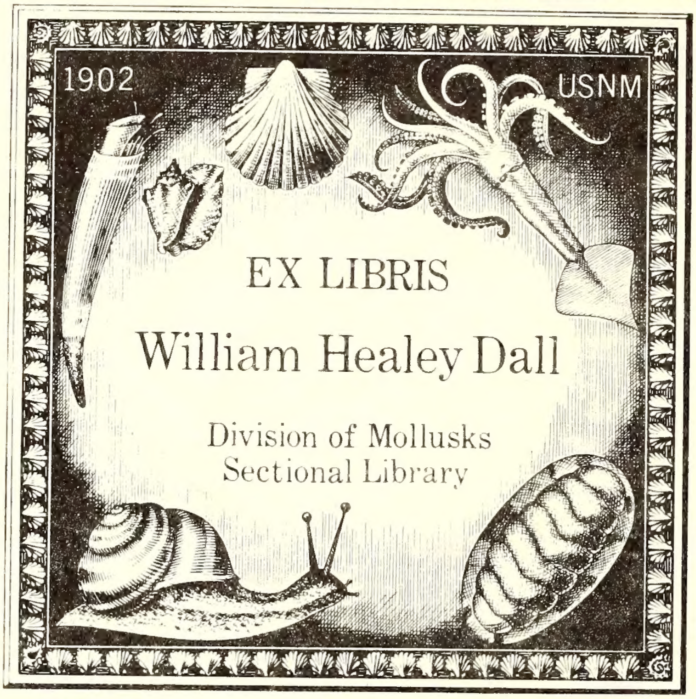

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JULY 1958

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Trigonostoma milleri Burch,1949 from Guaymas,Mexico

This species was described by John Q. Burch in Minutes 94,Oct., 1949,pp.2-3.

The type lot sent to the author consisted of some 50 specimens collected by the late Professor Herman Miller at Tambor, near Puntarenas,Costa Rica. Inasmuch as no other specimens are known to have been taken since the original lot, it is of some interest that specimens have been brought in by trawlers off of Guaymas,Sonora, Mexico.

The holotype is in the type collection of the United States National Museum, and paratypes are in the collections of the California Academy of Sciences,Stanford University, and the Los Angeles County Museum.

The original description follows: " Shell widely umbilicate,loosely coiled, entirely lax, whorls not touching. Color cream with fine reddish brown spiral cords continuous. Aperture triangular ,angulated in front. Whorls strongly tabulated with heavy tubercles above and below. Three low somewhat obscure columellar plaits and a strong basal fold."

There were 8 figures published with the description. J.Q.B.

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Subscription $2.50 per year

Until further notice the date of our meetings will remain a little uncertain. All members will receive postal cards advising them of the evening, program etc. Others should no doubt call the museum.

News of all shell affairs should be mailed to the editor-
John Q. Burch, 1584 W. Vernon Ave., Los Angeles 62,Calif.
Phone Ax 3-5710 Home phone Ax 2-7965

NOTICE

AFTER CAREFUL EXAMINATION OF THE INNER MARGIN AND TYPE OF MATERIAL WE HAVE SEWN THIS VOLUME BY HAND SO IT CAN BE MORE EASILY OPENED AND READ.

Range Extensions By Jim Valentine
(Personal communication, July 1, 1958)

July 1, 1958

Dear John:

I have a slight range extension of *Tegula brunnea* -- or if not an actual extension, at least an interesting distributional note -- and thought it might qualify for your minutes.

Robert Meade recently collected some littoral assemblages for our trace-element study (in May, 1958). One of the stations is Shell Beach just north of Pismo Beach, and in the collection are many large specimens of *Tegula brunnea* (they were alive). Evidently the most southerly station heretofore recorded on the mainland is Cayucos (in your minutes) although it lives on the Channel Islands.

Furthermore, there is an assemblage in the UCLA collections recovered by a diver (Reviea) on July 24, 1939, in 45 feet ¼ mile offshore at Point Buchon, between Cayucos and Shell Beach. *Tegula brunnea* is one of the most abundant species; the dead animals are still in the shells. *Calliostoma ligatum* and *Acmaea mitra* are also abundant, and *Diodora aspera*, *Haliotis aulea* (a very slight southern range extension), *Pomaulax undosus*, and *Acmaea scutum* are present. The Character of the bottom was not recorded, but surely it was rocky. There do not seem to be any previous records of *T. brunnea* at any depth below the littoral zone, although Smith & Gordon (Proc. Calif. Acad. Sci., Ser. 4, vol. 26, p. 201, 1948) record *brunnea* living on kelp offshore below the surface of the water.

This may be of interest in Pleistocene faunal interpretation, for *Tegula brunnea* is common in somewhat similar association in rocky-shore facies of the Upper Pleistocene at least as far south as Punta Baja, nearly 350 miles south of its present limit. As you have pointed out in the minutes (no. 57, p.6, 1946), *Acmaea mitra* is usually submergent sout of Point Conception, but lives intertidally in such exceptional cool-water localities as the south side of Punta Banda, where cool water wells-up. Perhaps *T. brunnea* is also capable of slight submergence, and can extend its range well to the southward with only a small change in the temperature regimen of near-shore waters in this region. Speculations along this line have been published by Bill Emerson and by myself.

Sincerely,

Jim Valentine

American Malacological Union-Pacific Division

The eleventh annual meeting was held at the University of California, Berkeley, June 27,28,29,1958. It was a very successful and pleasant meeting. All seemed to enjoy the many social contacts, and the papers were outstanding.

The officers elected for the coming year are:

Chairman- John E. Fitch, California State Fish and Game,Terminal Island,San Pedro, Calif.
Vice-Chairman- Dr. Rudolf Stohler- Department of Zoology,University of California, Berkeley, Calif.
Secretary- Mrs. Faye Howard, 540 Ocampo Drive,Pacific Palisades, California
Treasurer- Mrs. Eva Maye Fletcher, 1008 La Hermosa Drive,Redlands, California

Some of the papers read at the meeting are mentioned below.

Henry A. Pilsbry's Contributions to West American Conchology- by Dr. Leo Hertlein and Allyn G. Smith
The Bean Clam-*Donax gouldi* by John E. Fitch
Taxonomic Problems in Conidae by John Q. Burch
The Geologic History of Chitons by Allyn G. Smith
Notes on the Natural History of *Nemaeopelta* by Dr. S.S. Berry
On the Higher Classification of the Haliotids by Robert R. Talmadge
Cypraea mus Needs Attention by Crawford Cate
Some Notes About *Modiolus* by Emory P. Chace
The Continuing Battle Against the Giant African Snail by Dr. A.R. Mead
The Type Locality of *Aesopus goforthi* by Dr. Joshua L.Baily Jr.
The Snail, *Rumina decollata* (L.) in Arizona by Lloyd I. Showers
The Ocean Floor by George Kanakoff
Clipperton Island;Easternmost Atoll of the Pacific by Edwin C.Allison
The Taxonomy of the Sacoglossa by Patrick Milburn
Rare Shells in Kodachrome by Ross Stotter
A Tecnique for Preparing in toto Mounts of Molluscan Anatomical Dissections by Dr. Wendell Gregg
The New Draft of the International Rules of Zoological Nomenclature by Dr. Myra Keen
Tiphyocerma, a Strange Gastropod by Fr. S.S. Berry
Otoliths- Their Importance and Uses by John E. Fitch
Discussion and Kodachromes of *Cypraea* by Ray Summers

There were two field trips and other activities.

Dr. Albert R. Mead was chairman, and a very efficient presiding officer.

The work of the local committees, and Mert Henshaw, chairman of arrangements, was just about perfection.

A list of those who registered for attendance follows. However, many visitors and friends were in attendance part of the time or for certain papers.

AMERICAN MALACOLOGICAL UNION

BERKELEY, CALIF. JUNE 26-29, 1958

Mr. & Mrs. Robt. Alexander, 8542 Lemon Ave., La Mesa, Calif.
Edwin C. Allison (Ned), 1010 Cragmont Ave., Apt. 2, Berkeley, Calif.
Mrs. Gladys Archerd, 1133 Spruce St., Berkeley, Calif.
Mrs. Frederick (Bessie) T. Arnold & Miss Winifred H. Arnold,
2020 Magnolia Avenue, Long Beach 6, Calif.
Mr. & Mrs. Pete Badovinac (Martha), 123 Alta Vista, Roseville, Calif.
Nelson Baker, 279 Sherwood Dr., Santa Barbara, Calif.
Dr. & Mrs. Joshua L. Baily, Jr., 4435 Ampudia St., San Diego 3, Calif.
Phoebe Balch, 1145 Broun Ave., Lafayette, Calif.
Ruth Bancroft, P.O. Box 695, Walnut Creek, Calif.
Dr. S. Stillman Berry, 1145 W. Highland Ave., Redlands, Calif.
Jack Bradbury, 2037 Mira Mar Dr., Balboa, Calif.
Dorothy and Ann Brown, 1451 No. Ogden Dr., Los Angeles 46, Calif.
Mr. & Mrs. B.W. Brown (Zetta L.), 9 So. Rose, Lodi, Calif.
Mr. & Mrs. John Q. Burch (Rose), 1584 W. Vernon Ave.,Los Angeles, Cal.
Miss Helen Burton, 391 Adams St., Oakland 10, Calif.
Mr. & Mrs. Crawford Cate (Jean),12719 San Vincente Blvd.,L.A. 49, Calif
Mr. & Mrs. E.P.Chace, 2446 Van Dyke Ave., San Diego 5, Calif.
Keith W. Cox, 309 Hillside Dr., Woodside, Calif.
Gladys Demuth, 580 37th St., Sacramento, Calif.
Dr. William K. Emerson,American Mus. Nat. Hist., New York, N.Y.
Mr.& Mrs. John E.Fitch, 2657 Averill Ave., San Pedro, Calif.
Edna Fletcher, Hemet, Calif.
Mr.& Mrs. Howard L.Fletcher(Eva Maye), 1008 La Hermosa Dr.,Redlands,Cal.
Mrs. Floy Graham, 3138 Eton Ave., Berkeley, Calif.
Edith & Roland Gray, 735 Lake Muir Dr., Sunnyvale, Calif.
Dr. Wendell O. Gregg, 2200 So. Harvard Blvd., Los Angeles 18, Calif.
Victor Haack, 592 Stony Point Rd. Vetatuma, San Francisco, Calif.
Mary Handley, 41 Kenliworth Dr., Berkeley, Calif.
Capt. & Mrs. Marion Harris (Bessie), Fatima Estates Trailer Court,
Space 1, Rancho Cordova, Calif.
Mr. & Mrs. Virgil Herring (Muirid), 5561 Macdonald Ave.,ElCerrito, Cal.
Dr. Leo G. Hertlein, Academy of Sciences, San Francisco, Calif.
Clara D. & R.G.Hewitt, 2414 Bonnie Brae, Santa Anna, Calif.
Merton E. Hinshaw (Imogene) 2627 -39th Ave., San Francisco, Calif.
John J. Holleman, 1720 Sonoma, Berkeley, Calif.
Mrs. Faye Howard, 540 Ocampo Dr., Pacific Palisades, Calif.
Helen Hunt, 2437 Shattuck, Berkeley 4, Calif.
Elsie Hutson, 4517 B. St., Sacramento, Calif.
Hazel Jeschien, 1185 Keith Ave., Berkeley, Calif.
George P. Kanakoff, Los Angeles Museum, Los Angeles 7, Calif.
Homer P. King, 7540 Ogelsby Ave., L. A. 45, Calif.
Dr. A. Myra Keen, 2241 Hanover St., Palo Alto, Calif.
Eleanor Korver, 1709 Channing Way, Berkeley, Calif.
Dr. Phyllis Kutsky, 1139 Brown Ave., Laffayette, Calif.
Florence La Fayette, 5349 Robertson, Carmichael, Calif.
Mr. & Mrs. Douglas Larson(Mary), 2112 Gill Dr., Concord, Calif.
Mr. & Mrs. Elmer Lindquist (Thena) 10810 Julius St., Oakland, Calif.
Mary E. Long, Box 491, Sonora, Calif.
Neil Marshall, 654 Colusa Ave., Berkeley 7, Calif.
Dr. Albert R. Mead & Eleanor, 1249 East Mabel, Tucson, Arizona

Mrs. Freda B. Merrill, 5536 Manila Ave., Oakland, Calif.
Patrick Milburn, 425 Iris Ave., Corona Del Mar, Calif.
Priscilla J. Militante, Univ. of the Philippines, Diliman, Quezon City, Philippine Islands
F. Stearns Mac Neil, 632 Fairmeade, Palo Alto, Calif.
Lois McMakin, 859 Mission Way, Sacramento, Calif.
Muriel Olson, 1015 Park Hills Rd., Berkeley, Calif.
Marianna Paulson, 2126 Spaulding Ave., Berkeley, Calif.
Elton L. Puffer, 2424 Gough, San Francisco, Calif.
Mr. Joe Rosman & H. Chris Rosman, 1027 Euclid Ave., Berkeley, Calif.
Barry Roth & Mrs.Wm.Roth, 2140 Middlefield Rd., Palo Alto, Calif.
Frank Russ, 905 Broadway, Alameda, Calif.
John Saxby, 2734 Taylor, San Francisco 11, Calif.
John Sibert, 209 Topaz St., Balboa, Calif.
Allyn G. Smith, 722 Sta. Barbara Rd., Berkeley, Calif.
Mr. & Mrs. Ross Stotter, 1046 Ocean, Imperial Beach, Calif.
Mr. John P. Strohbeen & Mrs. Carolyn, 1135 King St., Sta.Cruz, Calif.
Ray Summers, P.O. Box 124, Petaluma, Calif.
Robert Talmadge, Box 71, Willow Creek, Calif.
Spencer Thorpe
Mr. & Mrs. Harry Turver (Mary), 11672 No. 2nd St., Yucaipa, Calif.
Jane Westfall, 2220 Durght Way, Apt. 1, Berkeley, Calif.
Miss Evelyn Wilson, 2808 Fruitvale Ave., Oakland, Calif.
Mrs. Lucille Zellers, 714 Elm St., El Cerrito, Calif.

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New Publications

West American Molluscan Miscellany-II. By S. Stillman Berry
1. Proposal of Five New Generic Taxons
Nomaeopelta new genus- Generitype Acmaea dalliana Pilsbry
Stearnsianum new genus -Generitype Uvanilla regina Stearns
(the Tegula regina (Stearns)
Lapsigyrus new genus- Generitype Alvania contrerasi Jordan
Opeatostoma new genus- Generitype Monoceras cingulatum Lamarck
(the Leucozonia cingulata Lam.)
Mitromica new genus- Generitype Mitra solitaria C.B. Adams
*** Dr. Berry has stated the reasons for his proposals in a clear and scholarly manner. It is hoped that at least some may be used as subgenera by those of us who prefer broad generic groups. J.Q.B. e
2. A Puzzling Prosobranchiate Gastropod- Hertlinella new genus
Hertleinella leucostephes new species
** An addition to the muricidae at the level of a genus is interesting and surprising. I hope to see a specimen of it.
3. A Redescription of the Common Californian Terebra -
Terebra (Strioterebrum) danai new species
** This name will replace the name in use Terebra philippiana Dall. We are obliged to Dr. Berry for adjusting this one. As far back as Minutes #48,p,19, May,1945 it was mentioned that the Dall names were no doubt invalid and another name needed, JQB

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Mollusca of the Kermadec Islands Part I by A.W.B. Powell-Rec.Auck. Inst. Mus. Vol.5, No. 1 and 2,1958

This is an interesting paper and well written and figured. Among the very interesting species is Conus(Kermasprella) raoulensis It is a sculptured cone and seems to be quite distinct. The other two species of Conus are C.bruuni new sp. and C.planorbis Born and the relationship is well shown in a key.

Minutes of the Conchological Club of Southern California

The meeting of Tuesday, May 20 was called to order by the President, Dr. Homer King, at 7:30. There were about thirty members and guests present, including Mrs. Tui Henderson, the President of the Hawaiian Malacological Society. It was announced that Mrs. Henderson would show the films of the Hawaiian cone-feeding experiments on the forthcoming television show, I Search for Adventure, two days later.

In the absence of most of the officers, Dr. King read the minutes of the previous meeting, and the Treasurer's report was dispensed with.

Publications Chairman Mr. John Q. Burch reviewed a few new publications, including a paper on the fauna of the Baldwin Hills, a geological survey paper, and three volumes recently published by the British Museum on famous shell collectors and their collections. Baker, Cracherode and Wilkins are included in these first three of a forthcoming series. These old collections are the foundations of modern conchological science. Other publications reviewed include the recent issues of the Nautilus, Venus, and the Malacological Society of London.

The short talk of the evening was presented by Mrs. Jean Wilkins, who spoke on Morro Bay collecting stations. Collecting here seems to be good, with surf, sand bars, rocks and just about every kind of typical collecting area present here, including high sand dunes south of Baywood Park where helminthoglyptas were found. The important thing to remember in collecting at Morro Bay is that the tides are one hour later than in Los Angeles.

Display Chairman Mr. Crawford Cate offered an exhibit of Strombus shells, including forty-seven of the fifty-six species described by Reeve. He read a short paper describing the genus and mentioning the many commercial uses of the common variety S.gigas.

The principal speaker of the evening was our former President, Mr. John Fitch of the State Fish and Game laboratory. Mr. Fitch showed his usual fine color slides to illustrate his recent three weeks trip to Chacala and Puerto Vallarta on the central Pacific coast of Mexico. The trip, sponsored by Dr. Boyd Walker of UCLA, was for the purpose of collecting fish for study. Some shell collecting was done along the way, despite the usual difficulties encountered in Mexico such as delays, mud, tire trouble, illness and insects. Mr. Fitch always seems to enjoy himself no matter what happens, and always provides an interesting and amusing program. He brought a large display of the shells he had taken on the trip.

The meeting was adjourned at 10 P.M.

Respectfully submitted,

Jean Cate, Secretary Pro tem.

A BOTANICAL EXCURSION TO SOUTH CHILE

by Walter J. Eyerdam

(June 12, 1958)

Twenty years ago I successfully completed a ten thousand mile botanical collecting excursion in Patagonia and went on thru the beautiful lake district of the Chilean Switzerland. One week behind schedule was fortunate for my partner Alan Beetle and myself as we were scheduled to be in the Concepcion and Chillean district exactly at the time of the earthquake which killed nearly 40,000 people.

At that time Prof. T.H. Goodspeed, director of the University of California botanical gardens at Berkeley, had three expeditions in the Andes searching especially for wild species of tobacco and seeds and bulbs of many rare ornamental plants as well as making large dried botanical collections for the herbarium. I was leader of the third contingent in Peru, Bolivia, Argentina and Chile.

On Nov. 26th 1957 Prof. Goodspeed again sent me to South Chile to collect all classes of plants but especially the subantarctic species in the coastal Cordilleras. It took eight airplanes to reach Santiago and by train to Valparaiso where I stopped one month in the Herzog hotel on the waterfront preparing and waiting for the proper season to explore the tops and ridges of the South Chile mountains.

During this time I made several botanical excursions in the province Valparaiso and made two rather strenuous night climbs up the Campana or Bell Mountain, made famous by Darwins' climb up this mountain the his "Voyage of the Beagle". Both times I made the trip with the botanist, Prof. Agustin Garaventa of Limache, who has found many new species of plants on this mountain. Both times I succeeded in collecting all the plants I was able to carry. My time was well filled out in preparing, labelihg and recording all of these plants.

While in Valpo I had ample time to observe the Chilean people and meet many. I was constantly impressed by the harmony and poise of the general public and the spirit of good neighborliness that one feels everywhere in Chile. Although there is a lot of class distinction in Chile it is one of mutual respect for each other. Everyone seems to have good manners and the well to do man and the common ox cart driver usually greet each other when passing by out in the country. Much of Chile is still living under conditions similar to our pioneers of one hundred years ago, especially in the mountains of the south. Wages are very low compared to ours, but everybody seems to be happy. There is no juvenile delinquency and very little crime in Chile. Most people marry rather young and have fair sized families. The public schools are excellent in Chile and kids are taught to respect grown people and teachers. In buses you often see children give their seats to elderly people.

Chile has a fine police system. Most of the police are young fellows. They are the smartly uniformed Carabineros which are semimilitary. They are highly trained and efficient and are always on the watch for crime.

The carabineros are loved by the public because they are always ready to assist people in distress. They are very courteous and seldom bawl out people for misdemeanors. They are everywhere in the city and in the country or mountains, but I never saw them arrest anyone. If we had them our gangsters would soon vanish.

Valparaiso has always been the near counterpart of San Francisco and in the past it was notorious for its waterfront dives and tough saloons. Even twenty years ago I never saw so many people with knife scars and cuts on their faces as in Valparaiso. Today one can walk thru dark alleys along the waterfront after midnight alone without fear of being robbed. I did so many times. There are still saloons and bottle shops everywhere in Chile. All kinds of hard liquor is sold along with groceries or in hotels, restaurants and boleterias just as in Alaska. In spite of the vast quantities of wine and liquor consumed I hardly saw any drunks. In fact, I have seen more intoxicated men right on our skid road in Seattle in one hour than I saw altogether in Chile. There are no winos nor alcoholics. Everybody seems to be full of exuberant health and vigor. Half of the women have babies without doctors and don't seem to mind it. The average men are athletic and strong and a large proportion of the young women are shapely and good looking to beautiful.

There are very few foreigners in Chile. In the south the Germans ans Swiss came mostly about the time of the gold rush to California and pioneered the wilderness. They are highly respected amongst the Chileans. Most of the better schools are tutored by Germans who for the most part still cling to the old style Swiss and German customs of fifty years ago. Except for modern business men there are very few Germans of recent immigration. Aside from several missionaries I saw only three Americans in Chile. One was a woman resident of Chile for twenty years, one was a sailor that bummed me for a quarter, and one a drunken Texan trying to pay his hotel bill with 4 cents worth of Chilean pesos and raising a row over it.

In Valpo lives Dr. Edwyn Reed, 78 years old. He is one of the leading physicians and surgeons of Chile as well as a first class naturalist and patron and friend of every biologist that comes to Chile. His fine, large mansion up the steep mountain side contains his private museum. Most of the avifauna of Chile, and the rest of the vertebrate fauna of Chile are represented. He also has many large stuffed animals from No. American and a fine collection of idols from Isla de Pascua (Easter Island) which belongs to Chile. His superb collection of over ten thousan species of coleoptera (beetles) of So. America were sold about three years ago to California Academy of Sciences. One large room contains only the portraits or enlarged, framed photos of distinguished visitors, including that of Charles Darwin. Reeds' father was an English professor of biology.

During the past 12 years Dr. Reed has had two severe accidents that crippled him badly. In spite of this handicap he arises very early in the morning and attends to all of his official duties in three offices with very little help. He climbs high stairs many times per day in spite of his crippled legs and helps his aging wife to keep his home in order. They have only a young house maid for a servant. Without Dr. Reeds' ever helping hand as a special friend of Prof. T.H. Goodspeed success of the four Univ. Calif. botanical expeditions in Chile would have been small.

At the request of Prof. Goodspeed, Dr. Reed induced his son Wilson to give up his plumbing business to use his closed in truck and be my assistant and guide on the two months excursion in So. Chile. He had been in the south a couple of times before and proved to be an excellent companion and helper. Wilson is father of ten children. He is the undefeated champion middle heavy weight boxer of Chile as well as champion swimmer and high diver. Wilson has a good education and is a graduate of a medical college and speaks good English as well as some German. Being known throughout Chile and being of a genial and good humored disposition I found him quite indispensable .

On January 7th we left Vina del Mar,with Wilsons' two oldest boys, on our journey to south Chile. We went thru Santiago, the capital of Chile, and stopped over night in the city of Los Angeles. For two days more we drove thru the great valley between the Andes and the coastal Cordilleras. This whole country down this far still resembles California even to the great forests of planted Eucalyptus, Monterey Cypress and Monterey pines and weeds and the one story Spanish type houses. We stopped several hours at the most beautiful waterfalls in Chile, the Lajo on the Lajo River. I do not recall of one to compare with this one in our country. I never heard of it before as Chileahs are not prone to brag about the marvelous scenery in their country. Just north of Santa Fe we were ferried across the scenic Rio Bio Bio. The price was fifteen cents for truck and five passengers.

In the morning of January 10th we arrived at Angol, the capital of Malleco province and were soon at the 1400 acre farm of the American Methodist Mission at El Vergol on the Malleco River. There we were cordially welcomed by the Reverend Dr. Dillman Bullock of Michigan, who built up this fine mission agricultural experimental farm, one of the best in Chile. It was very refreshing to enjoy the hospitality of these good American missionaries and to have a couple of days of American board and room.

Dr. Bullock in nearly 80 years old but still very active. Besides being a minister of the Gospel he is also a first class naturalist and has one of the finest local museums in Chile. The museum which he alone has built up contains extensive collections of the biota of Malleco and bordering provinces. Dr. Bullock has made many new discoveries in the biota of ths region, about twenty species bear his name. Most notable is the large room containing the archaeological artifacts of an unknown tribe of Indians that lived on the Malleco river. These people lived between the more numerous Arancarian and Mapuchi tribes and had a culture quite different than either. They were also smaller in stature and their nearest of kin seem to have been the Matacco Indians of the Gran Chaco a couple thousand miles N. E. of here. They were, however, a sedentary agricultural type of Indian. The Mataccos are primitive nomads.

Careful studies of all artivacts including earthen burial urns, pots, idols, weapons and utility stonds were made in cooperation with some of the leading archaeologists of the Am. Mus. of Nat. Hist.

All of our excess baggage was left at the mission and two days later we were driving into the Nahuelbuta Mountains of Malleco province.

We left Angol with two Chilean women that belonged to the big ranch owner of the quarter million acre cattle range in the mountains. One was the cook. The roads were being repaired and in some areas extended by the many local farmers and laborers. It rained a little during the night, fortunately enough, to lay the deep dust. Except for huasos or horsemen, nearly all conveyances in these mountains are ox carts. They are very suitable for the conditions and more useful than trucks or horse drawn vehicles.

In the evening we finally arrived with the two women at the main headquarters of the big Fundo or ranch and were cordially greeted by the two Solano brothers. The older one, a former Lord Mayor of the city of Temuco, is about 72 years old and the owner of the ranch. It is a very pretty place with picturesque surrouhdings of buildings and gardens and orchards. Although the main house looks like a big barn on the outside it is very nice inside and I was rather surprised to note how well kept and taken care of everything on the ranch was. The big wooden fences are all made of gnarly hard wood (Northofagus Dombeyi a species of Antarctic beech. Each post is about 7 feet long and weighs up to 100 pounds. Three square holes are cut thru each post with a big Chilean axe and placed solidly in the usually rocky ground. Long rails are placed in the carved square holes. This is an extremely laborious job, but Chileans thrive on hard work and are very efficient. These fences are built to last at least a century. There are millions of these kinds of fence posts in S. Chile. I always called them Nahuelbuta fences. They are really quaint and rustic in appearance especially when covered with Usneas (old mans' beard lichen).

Our hosts were very hospitable and treated us with high esteem. Both of them speak English and the owner sutdied pharmacy in Germany and worked in many cities there. This place is very remote and few outsiders ever come to this lovely place. The younger brother, Fernando who is 69, was here on a visit from Valpo where he is one of the leading aeronautical engineers. Thirty years ago he was the first aviator to fly across the Andes in Chile.

Formerly there were often grand parties that sometimes lasted a week held at the home of our host. All of the important farmers and many friends and esteemed guests came from the cities. Then there was much merriment with plenty of wine and good food and everybody, including the horsemen and ox drivers, really had a hilarious and enjoyable time.

The following is copied from my daily diary.

January 12th, Sunday- Fundo Solano - Nahuelbuta Mts.: Our hosts, the brothers Eduardo and Fernando are always the most considerate in making us enjoy their hospitality and make us really feel at home. Today was the roundup of one section of the mountain cattle district when all of the Arieros and huasos drove the cattle into the strongly built corral on the mountain top to be branded. There were about 750 head including two giant bulls. Most of the men came on horseback but many came by ox cart with their boys. It was interesting to watch the lassoing and branding. Sr. Solano has a nice long table, about 60 ft. long, in the shade of great Chilean beech trees where we had lunch and dinner His head foreman is chief of the Arieros and huasos, a man of excellent skill and quiet and calm determination.

A small rivulet tricles down the mountain and makes a boggy area about 40 feet wide and includes a small wood. I collected about 20 species of mostly marsh types of plants and so have started off with a fairly good collection. I was able to label and record them all before going to bed. Around the farm and on top of the big house are nearly always a large flock of carrion birds similar to the Mexican Hopilote.

January 13th and 14th, Monday and Tuesday - Fundo Solano to Gueseria, a Ranch outpost: Sr. Solano is the perfect host. We as stnangers, came in a truck to his far off in the mountains home and he and his brother make us feel at home in every way. Their time, food, lodging and storage for our numerous baggage. About 40 men work on the Fundo. He gives us his head foreman with five horses and the best saddles to take us to his best outpost with good cabins, tables, firewood, beds and running water in as ideal spot that is very beautiful. The foreman takes us on a long excursion to the highest mountain top of the range with the five horses and helps us in every way he can. After two days he heaves us and sends his gest gaucho to help us. I nicknamed him Sancho de Panra, whom he so much reminded me of. He took us on several interesting excursions and does the chores around the camp. Every morning at daybreak he rounds up a couple of range cows and milks them for us.

Every Chilean one meets in the country or in the mountains, from the poorest oxcart driver or charcoal burner to the highest class educated person is invariable courteous and well mannered, hospitable and cheerful. I have yet to see any of them ,even when drinking too much, that has become angry or used any profanity. Chileans are noted for their hardy bravery and chivalry.

Today it was rather cold all day long. The boys dug up about 40 Crinus bulbs and three species of orchids for me. The head foreman rode on his horse about 40 miles to Angol to do some shopping. I ordered 20 liters of pure gasoline. My new kerosene lamp (price 24 dollars) purchased in Valpo is no good so I am discarding it. The coleman lamp works O.K. and I have success in drying plants quickly. In the evening the huaso came.

There are plenty of plants to collect in this area and it will keep me fully occupied here for a week or ten days.

To be continued.

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NEW PUBLICATIONS

Basteria- Journal of the Netherlands Malacological Society-Papers--
Notes on Kenya Land and Freshwater Snails 5. Records of Vertiginidae, and Valloniidae from Kenya,Zanzibar, and Tanganyika by Bernard Verdcourt

Spisula bartingi nov.spec. , a new bivalve from the Eemian in the Netherlands by G. Spaink

Notes sue les limaces.4. Qu'-est-ce que *Limax fulvus* Normand ? by C.O. van Regteren Altena

The Genus *Hemitrochus* in Puerto Rico by Ruth D. Turner
Occasional Papers on Mollusks- Dept. of MollusksmMuseum of Comparative Zool.,Harvard University, Vol.2, No.22,May 29,1958
pp 153-180 ,pls. 23-29.

JULIA ELLEN ROGERS 1866 - 1958

Julia Ellen Rogers, author of "The Shell Book", died on May 20, 1958 in her 93rd year, after an illness of two months at her home, 355 Junipero Avenue, Long Beach, California. A memorial service was held at the First Congregational Church and interment at Minburn, Iowa.

She was born in LaSalle County, Illinois, January 21, 1866 to Daniel Farrand and Ruth Llewellyn Rogers. She and her family lived many years in Iowa where she was educated at the Iowa City Academy and State University of Iowa and an honor graduate. She spent two years at Cornell University where her first book, "Among Green Trees" earned Miss Rogers her master's degree and election to Phi Beta Kappa in 1902. It introduced the author to Doubleday, Page and Company, who had embarked on a great series called, "The New Nature Library". She joined the staff of "Country Life in America", and conducted the page called "The Nature Club" for ten years, during which period she produced the two standard works of reference "The Tree Book" in 1905 and "The Shell Book" in 1908. Among her other books are, "Wild Animals", "Earth and Sky", "Trees and others of the "Every Child Should Know" series, which are out of print, but through the years, "The Tree Book" and "The Shell Book" have held their interest for students and beginners alike. Miss Rogers celebrated her 85th Birthday with the revised edition of "The Shell Book". Dr. Paul Bartsch and Dr. Harald A. Rehder recommended the revision of nomenclature, but not the text which, "Is just as fresh and stimulating today as when it was first written."

Miss Rogers moved to Long Beach, California in 1912, where she was an active member of the Browning Club, the Agassiz Club, Woman's City Club, sponsor of the Long Beach Shell Club, and served the community for ten years on the Board of Education. She was a member of Pi Beta Phi and served on the National Board as Secretary for two years and was President of the New York Alumnae for two years. She was a teacher, author and institute lecturer. Her most popular lecture was the "Romance of the Paisley Shawl", illustrated with precious heirlooms.

Miss Rogers had traveled extensively exploring by motor most European countries, and made a world tour in 1935 including the Orient, South Africa and South America.

She will be missed by her family and her many friends around the world. She is survived by one of her brothers, Dr. Thomas Rogers of Long Beach, and her two sister, Mrs. Mary Rogers Miller of San Pedro, California, and Mrs. Eliza Rogers McNutt from Wooster, Ohio, who has made her home with Julia Ellen Rogers for the last several years.

SOUTHERN CALIFORNIA CONCHOLOGICAL CLUB

The meeting of June 17 was called to order by the President, Dr. Homer King, at 7:30 P.M.; there were sixteen members present.

In the absence of the Secretary, Mrs. Faye Howard, Mrs. Burch read the minutes of the previous meeting. The Treasurer's report was omitted, due to the absence of the Treasurer, Mrs. Dorothy Brown. A motion was passed to continue to hold the meetings on the third Tuesday of each month until further notice. It was announced that the program for the meeting of July 19 would consist of reports on the Berkeley AMUPD meeting by those who had attended. Future meetings were tentatively announced to include programs by Mr. Burch on Olividae; by dr. William K. Emerson of the New York Museum of Natural History on his trip to the Gulf of California; by Mr. Cate on Cypraea; and two programs by Dr. King and Mr. Ned Baker, subjects to be announced.

Publications Chairman John Q. Burch mentioned a new work by David Nichols, A Survey of Inequivalve Pelecypods. It was announced that Dr. Myra Keen's new book on West Coast shells could be expected in October; also that a new work by Bernard C. Cotton on the Gastropods of Australia would be published soon.

Display Chairman Crawford Cate brought an exhibit of Mitras containing about fifty species and illustrating the various forms covered by this family. Perhaps the outstanding feature of the exhibit was a separate mount containing a growth series of Mitra tesellata from Hawaii, taken alive in 95' of water. A short paper was read describing the living habits of some of the Mitridae. It was announced that the display for July would be Hawaiian shells.

The previously announced speaker of the evening, Professor Jens Ostergaard of Atherton, California, was unfortunately unable to be present, due to serious illness in his immediate family. Mr. George Kanakoff of the Los Angeles County Museum kindly offered to fill in for him, and provided a very interesting meeting with a talk on The Bottom of the Ocean. He covered the history of ocean-ography, and with many fine diagrams and illustrations, traced the evolution of mapping operations to modern times, starting with lead weights, which were the earliest depth-measuring instruments, and finishing with the present-day echo sounding techniques which not only provide an accurate picture of the ocean floor, but also indicate schools of fish and other concentrations of sea life.

The meeting was adjourned at 9:30.

Respectfully submitted,

Jean Cate, Secretary Pro-tem.

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year.

The August meeting will be held at the Los Angeles County Museum
Exposition Park, Los Angeles at 7:30 P.M. Tuesday, Aug.5.
All interested persons are welcome.
The guest speaker will be Dr. William K. Emerson
Subject: Puritan-American Museum Expedition-
Illustrated with kodochrome slides
The display will be specimens of Bursa conducted by Mr. and Mrs. Crawford Cate.

News of shells or shell affairs should be mailed to the editor-
John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62,Calif.
Phone Ax 3-5710
Home phone Ax 2-7965

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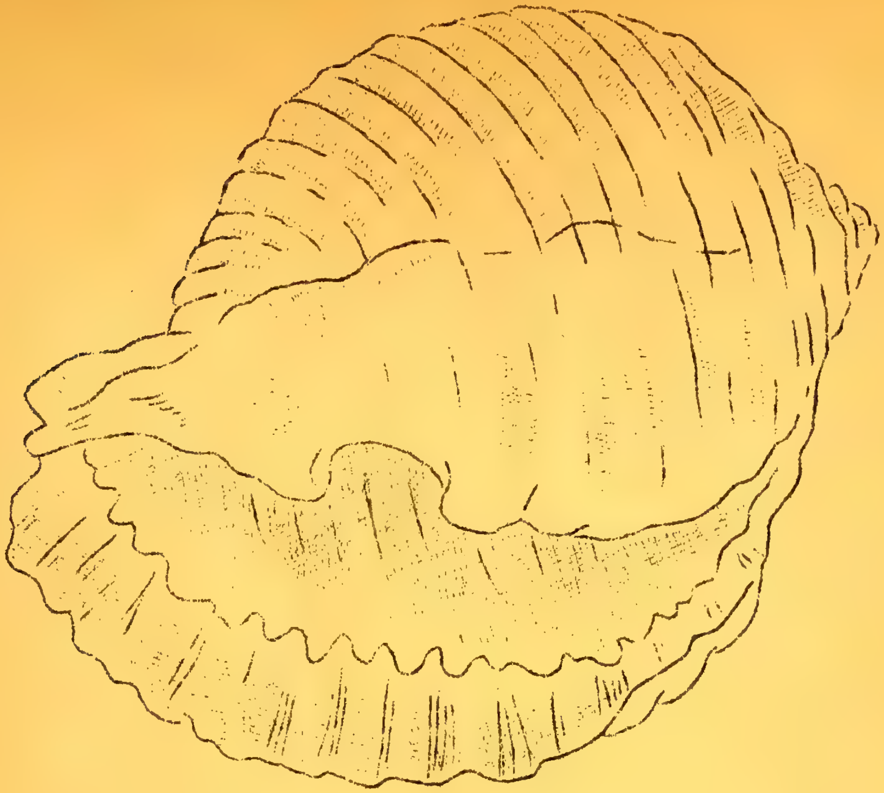
Mr. and Mrs. John Q. Burch had the pleasure of being hosts,July 10, at dinner for Dr. R. Tucker Abbott, his wife Mary, and Mr. John Dupont, between flights on their way to a collecting expedition in the Philippines, and Col. William McCarthy. Others at the dinner were Mrs. Tue Henderson,Mr. and Mrs. Crawford Cate, Dr. and Mrs. Homer King , and Ray Summers. We were happy that Bill McCarthy could be with us. He was here on official business. Ray Summers was our house guest for several days, and needless to add, the Cypraea collections of southern Calif. were thoroughly checked. Mrs. Tue Henderson, president of the Hawaiian Malacological Society is now a resident of the mainland, but is returning to Honolulu soon for a brief time. It was a happy meeting and at the dinner a cocktail was served with the compliments of Miss E. Wistar.



SEA SHELLS OF TROPICAL WEST AMERICA

By Dr. Myra Keen October $12.50

At the meeting in June of the American Malacological Union, Pacific Division, at Berkeley, it was our pleasure to see some of the superb color plates for this long expected book.

Mollusks from Lower California to Columbia. There will be over 4,000 entries in the index, 1500 illustrations, a map, and 10 full page color plates, as well as an extensive bibliography. 6 1/8 x 9 1/4. This will be the first book on the shells of the Gulf of California. The comprehensive treatment and the high quality of the illustrations will make the book of enduring value for both libraries and individual collectors.

The price has been tentatively set at $12.50, but to those of us in the book trade it is obvious that such a price would be impossible without some substantial subsidies from interested sponsors.

Your orders are solicited for immediate delivery when ready.

John Q. Burch, 1584 W. Vernon Ave., Los Angeles 62, California

The Type Locality of Aesopus goforthi

By Dr. Joshua L. Baily Jr.

Presented at the meeting of the American Malacological Union, Pacific Division, Berkeley, Calif., June 28, 1958.

This species was described by Dall in the Proceedings of the National Museum for 1911, with Monterey cited as the type locality, but not illustrated. Ten years later, in Bulletin 112 the illustration was published and the type locality confirmed. Then in 1948 Allyn Smith and MacKenzie Gordon published a ckech list of Monterey records in the Proceedings of the Calif. Academy in which doubt was expressed as to the authenticity of the record, as it has never been taken in Monterey since. These three references are the only instances of the occurrence of this name in malacological literature, so far as I am aware.

To the best of my knowledge and belief Mr. Goforth, for whom this species was named, never collected at Monterey, nor at any other point more than a few miles distant from his home in La Jolla. My first meeting with him was in the spring of 1903, when he and his wife visited La Jolla for a few hours. He had just retired and they were making a tour of inspection of the state with the intention of finding a suitable locality in which to spend their declining years. Upon our return to La Jolla in the fall of the same year we found them installed in their new home, they having decided that La Jolla was the best place in California to live.

I do not know hat Mr. Goforth's occupation had been. That he was probably a professional man seems indicated by the fact that in speaking of the shells he always us ed the classical system of pronunciation that is taught in preparatory schools but never used any where else. Like many amateur collectors, he had certain favorite genera in which he was more interested than in others. Mr. Goforth's favorites were Conus and Crepidula.

There is only one Conus found in California, and it is not very variable. A collection of California cone shells would not be very exciting, and so Mr. Goforth had to depend upon dealers to supply him. He had a large number of tropical cones, selected to display their prilliant and variegated color patterns, which he enjoyed showing to visitors, but which had little or no scientific value because he had not data as to the circumstances of their collection. His Crepidula collection was altogether different, for he had gathered all of them personally. He recognized only three species from California. Actually about twenty nominal species are mentioned in the literature, the correct number is somewhere between these two extremes. Strangely enough, none of the three species recognized by him is found on our coast; they are all from Mexico or South America, but they are represented in California by closely related species and they themselves represent the three subgenera of Credpidula generally recognized today.

Mr. Goforth believed that one of the important features to be observed in subspecies was the proportion of the total population constituted by the subspecies. Therefore he was not satisfied with

gathering only the unusual forms; he took everything he could find and kept accurate records of the frequency of each form. He divided the beach between Delmar and Point Soma into areas distinguished by ecological factors, keeping the specimens from each separate from each other. He must have had several dozen cigar boxes full, each with several hundred Crepidulas. If his collection could only have been preserved it would have proved of inestimable value to any one specializing in this genus.

A discovery made by Mr. Goforth as the result of his study of Crepidula was the habitat of those puzzling specimens in which the pocket is on the convex side. The only explanation which he could offer was that they lived inside coiled gastropod shells. But as neither living nor empty shells ever afforded specimens of Crepidula he then turned to an examination of shells occupied by hermit crabs and here he found the answer to his problem, for practically every shell that shelters a hermit crab shelters a Crepidula also. Probably better trained scientists in other localities knew this, but no one in La Jolla knew it until Mr. Goforth learned it as the result solely of his own efforts.

In those days La Jolla offered two opportunities to the retired business man to use his time--the golf course and the beach. For Mr. Goforth the golf course was out--he could not play golf because he had a wooden leg, so he became a conchologist and went to the beach. Previously he had not been interested in shell hunting. Mrs. Goforth also had a game leg--she was a victim of arthritis, in those days called rheumatism, and the doctor under whose care she had come was either a quack or a boob--possibly both. In an attempt to restore its original limberness to her knee he flexed it so violently that he immobilized it with the result that she was permanently crippled and could not walk anywhere without leaning heavily on Mr. Goforths arm. I use the word "heavily" advisedly for she looked as if she might weigh between two and three times what he did. Also since Mrs. Goforths game leg was her left one, but Mr. Goforths was his right, it follows that Mr. Goforths wooden leg had to support not only his weight but Mrs. Goforths weight also. It was quite a mystery how Mr. Goforth was able to maneuver her up and down the hill from their house to the beach without accident, yet he did this every day, and neither one of them ever fell down.

If I remember aright, Mrs. Goforth never developed a liking for collecting. She generally took a book with her and sat down with it at the upper reaches of the beach where the sand was warm and dry, and where she could recline in the event that an exposition of sleep should come upon her, but Mr. Goforth would stretch himself out just above the breaking ripples, with a hand lens in one hand and a pair of forceps in the other, and a cardboard box which he could push along the sand in front of him, and there he would slowly pick up shells too small for any one else to notice.

He spent the evenings sorting out his plunder, counting the specimens and writing out labels for those which he could identify, for he was most meticulous in his record keeping. And to minister to his comfort he generally removed the shoe from his good foot and replaced it with a bedroom slipper. He did not remove the shoe from his wooden leg, for when he went to the beach he always got his feet wet, and this

caused his wooden leg to swell so that the shoe could not be removed until the following day when he would be getting ready to go to the beach again. I presume that he detached his wooden leg in its entirety when he retired for the night.

In those days there was only one mail a day at La Jolla, and practically every resident of the village went to the Post Office at two every afternoon, to await the opening of the window after the mail was sorted, when the assembled crown would mill forward, each one hoping to get to the window first. Now it is a well known fact that anyone who has had a limb amputated always feels as if the limb was still there, and if anyone inadvertently brushed against Mr. Goforths stump this act produced the feeling that his toes were crossed, and in order to uncross them it was necessary for him to roll up his pants leg and pat his knee. Those who knew him were not surprised when it became necessary for him to perform this ritual, but to those who were not well aquainted with him it was somewhat startling to see him stoop down and roll up his pants leg, exposing the thumb tacks that served him for a garter.

Those who are familiar with the first edition of "West Coast Shells" by Prof. Josiah Keep will recall that it contained an appendix consisting of some brief biographical paragraphs dealing with those who had made significant contributions to modern conchological knowledge. It occurred to me that it might be advantageous to become acquainted with some of these personages, and I selected three of the most promising sounding one to write to. In my innocence I did not notice that the book had been printed about sixteen years earlier; thus giving these people ample opportunity to die in the meantime. My first intimation that this might be the case was when I received a letter from Dr. Nolan of the Academy of Natural Sciences in which he informed me "Mr. George W. Tryon has been dead since 1888." That was the year before I was born. Well, so much for that.

A Few days later my letter to Dr. Wesley Newcomb at Cornell University was returned to me bearing a big rubber stamping "Unknown". It was quite a shock to me to realize that such a scholar as Dr. Newcomb was could be so completely forgotten by his colleagues at the University in so few short years after his death.

My third letter brought more fruitful results. It was addressed to Dr. Dall at the National Museum, who was then at the zenith of his activity. He wrote me a very nice letter in reply, sending me some of his own reprints, a letter of introduction to Professor Kelsey, the president of the San Diego Commercial College, who was one of the foremost conchologists on the coast, and a list of the books which he thought I should have in my library. He also invited to me to send him anything I might be unable to identify, and to cap the climax, requested me to collect Vitrinellidae for him. He said they could be found among the broken gragments of larger shells attached to sea anemones to conceal them, and that he had found in such environmental localities a great many rare shells which could not be obtained elsewhere, when he collected in California more than forty years earlier. I showed this letter to Maxwell Smith who was living in La Jolla at this time, and his reaction was "If Dr. Dall was old enough to be interested in collecting shells forty years ago, just think what a

terribly old man he must be now." I also showed it to Mr. Goforth, who said "If you can collect shells for Dr. Dall, I don't see why I cant." Accordingly he began making sendings, and I have no doubt that the holotype of _Aesopus goforthi_ was among these. How did it happen then, if this was the case, that Dall reported it from Monterey?

I do not know, but I strongly suspect that the trouble was Dalls' failure to distinguis Pacific Beach at San Diego from Pacific Grove at Monterey. He made a similar error in some new species discovered by Orcutt. Also, the name Pacific Beach was originally given to the sand spit that divided False Bay from the ocean. When the railroad built through a station called Pacific Beach was established at a point several miles inland, and the original Pacific Beach was renamed Ocean Front, although the original name was continued in conversational use. It is not impossible that Dall may have consulted a map, and seeing that Pacific Beach was not on the coast concluded that the locality cited was an error, and modified it accordingly.

When the original description appeared I was a student at Haverford College, and my wife was a student at Mills. Of course she was not my wife yet, but we were in the corresponding stage and I received a letter from her in which she asked "Did you know that Mr. and Mrs. Goforth were both dead?" The fact that no details were cited makes me think that they must have been gone for some time. If so, this would explain why Mr. Goforth made no effort to comment on the type locality. He probably never knew that a new species was to be named for him. This was unfortunate, as nothing would have given him more satisfaction than to know that his name would be perpetuated after his death by a discovery which he himself had made during his lifetime.

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Mrs. A.W. Gillis

Mrs. Gillis passed away Monday, July 21. Mr. and Mrs. Gillis had entertained company Sunday. The guests left around 8:30 P.M., and shortly afterward Mrs. Gillis complained of a severe headache, and died Monday at noon. They have resided at 1904 N. Madison Ave., Pasadena, but Mr. Gillis will now live with the daughter in Yucaipa.

Mrs. Gillis was secretary of the Conchological Club for a number of years. They have been active members since 1939. Their interest in shells began when they were located in Hawaii and elsewhere in the Pacific serving in their religious work. Mrs. Gillis will be remembered by a host of friends as Harriette. It is nice to think of her pleasure when adding to her collection within the past month.

****

K.J. Grosch , of Mocambique, Portuguese East Africa lost his life by drowning,no doubt after shells. The first we have heard of this is from the announcement in the Hawaiian Shell News. This will be a genuine loss because Mr. Grosch knew the difference between good specimen shells and poor material. We have been depending upon him for the past several years to send boxes of beautiful material regularly. We corresponded steadily and he was greatly interested in methods of obtaining deeper specimens by trapping,dredging etc. His letters have been so personal that I feel the loss of an old friend although we never met in person.

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Publications Received

The Family Pinnidae in the Western Atlantic by Ruth D. Turner and Joseph Rosewater. Johnsonia, Vol.3, No.38,June 28,1958 pp.285-386 Plates 149-171.

It is a genuine pleasure to examine a monograph so thorough and well illustrated that the reader will feel that he may find the answer to all of his problems and rely upon the work with confidence. The general information on the family, shell structure,anatomical detail, as well as an excellent discussion of the classification of the family in general, will make this publication of incalculable value to anyone working with the pinnidae.

This is an excellent guide for some ambitious scholar to follow in a monograph of the pinnidae of the Indo-Pacific.

Bathygalea, A Genus of Modorately Deep-Water and Deep-Water Miocene to Recent Cassids By W.P. Woodring and A.A. Olsson. Geol.Survey Prof.Paper 314-B

This scholarly paper is a complete discussion of this genus. It must be quite rare, extremely rare Recent and probably not too well known in the fossil. At first glance the novice may be startled at the resemblance of the figures to the rather common fossils we find in Elsmere Canyon, Pliocene, which most of us label Ficus (Trophosycon) ...

This paper will be of interest again to those who are attempting to maintain a check list of Recent species from the eastern Pacific. Here is another new one- Bathygalea (Bathygalea) pilsbryi Woodring and Olsson n. sp -this paper 1957. The type locality is Seymour Bay,Indefatigable Island, (Isla de Santa Cruz),Galapagos. It is the only species of this genus from the eastern Pacific.

It is interesting to note that of the three known Recent species, in addition to the new species mentioned above,Bathygalea coronadoi (Crosse) from off Matanzas,Cuba and Bathygalea wyvillei (Watson) from the Philippines even though from the opposite sides of the earth are astonishingly similar.

Adiciones A La Fauna Malacologica Cubana- II Por C.C. Aguayo y M.L. Jaume-Memorias de la Soc.Cubana de Hist.Nat,April,1958 pp 91-102, 1 Pl. 7 figs. All new species of Helicinidae

Three interesting papers by Dr. David Nicol who is now professor at Southern Illinois University, Carbondale, Ill.,
A Survey of inequivalve pelecypods- Wash.Acad.Sci.,Feb.1958
The pelecypod Euloxa : Observations on new localities May,1958
Geology- Taxonomy versus stratigraphy April,1958

Bases for Higher Categories in Classification- by C.D. Michener Systematic Zoology, Vol.6,No.4. pp 160-173. A good paper to read for those interested in systematics.

The importance of Bacteria in Lab.experiments on the larvae of Ostrea edulis (L.) By P.R. Walne Jour.Mar.Biol. 1958 37,pp 415-25

An adult digenetic trematode from an invertebrate host: Protoeces subtenuis (Linton) from the Lamellibranch Scrobicularia plana (Da Costa) by R.F.H. Freeman and L. Llewellyn- Journ.Mar.Biol. 1958,27 pp 435-457

The Gulellae (Moll.,Streptaxidae) of the Usambra Mts., N.E., Tanganyika By Bernard Verdcourt -Tang.Notes & Rec.,1958 92-102

The Egg-Laying Habits of *Pomatiopsis cincinnatiensis* (Lea) By Henry Vam Der Schalie and Harold J. Walter- Am. Mic. Soc. Oct,1957 pp. 404-422, 3 figs.

Three New Mexican Land Snails of the Genus *Humboldtiana* By John B. Burch and Fred G. Thompson- Occ.Pap.Univ.Mich. Mus.Zool. No.590 Dec. 31,1957

Key to the Genera of Freshwater Gastropods (Snails and Limpets) Occuring in Michigan by Harold J. Walter and John B. Burch Univ. of Mich.,Mus. of Zool., Circular No.3

Studies on the anatomy of *Lymnaea humilis* Say by Bruce M. McCraw Canadian Journ. Zool. Vol.35 ,pp 751-768 ,15 figs.

A collection of mollusks from northern Venezuela by Fred G. Thompson Occ.Pap. Mus. Zool.- Univ. Mich.,No. 591,Nov.20,1957

New York Shell Club Notes No.43,June,1958
A nice issue, and among others the paper by Anthony D'Attilio on East African Cones is well done. On the whole my findings on these species of *Conus* have agreed exactly as in this paper. There have been a few cases where we seemed to disagree, but this is no claim that Tony was in error. It may very well be the other way.

Hawaiian Shell News- Vol. VI, July 2,1958, No.9
This is always a newsy and informative publication. If, by chance, you are not getting it I suggest that you send your $2.50 to Karl W. Greene. However, I have assumed that those interested in world wide shells are as I note with a smile in this issue alike " The Indianapolis News used to advertise that the News covers Indiana like the dew". Karl is not too sure about the comparison but it should be true.

*****

For the John Q. Burches this has been an interesting summer. Besides having as dinner guests the Tucker Abbotts of the Philadelphia Academy, John DuPont of Delaware, and Col. Wm. McCarthy of Virginia, Ray Summers spent a few days with us in June. Miss A. McNamara of Adelaide,Australia came to see us. Mrs. Wray Harris of Honolulu, Arthur Latham of Berkeley, came to call with Gerald Gaines of L.A. Mrs. Tui Henderson , president of the Hawaiian Malacological Society was returning to Honolulu about the same time Mrs. Harris returned, so we had a farewell for them, and Miss Catherine Ahders,Secretary of the New York Shell Club , visiting in Southern California, were our dinner guests, July 28th, and later in the evening a number of southern California collectors called. On August 5th, Dr. William K. Emerson of the American Museum of Natural History, New York was our house guest, and the guest speaker at the Conchological Club of Southern California- Results of the Puritan American Museum Expedition to West America, nicely illustrated with color pictures, so that we all wished to take off for the south. We always feel honored when we are looked up by our travelling friends, some of whom we have never seen knowing them only through our letters. It is our pleasure to call in the local collectors to share our good fortune.

MINUTES 181

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

SEPT.-OCT. 1958

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News of shells and shell affairs should be mailed to the editor-
John Q. Burch,
1534 W. Vernon Ave.,
Los Angeles 62, Calif.

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The greater part of this issue will be the first installment of a series of papers by John Q. and Rose L. Burch on the family olividae. The cooperation and criticism of our fellow collectors is sincerely requested.

If such work is welcomed and can be made a mutual project, it may be possible to accumulate sufficient data to make the end result a worth while contribution.

OLIVIDAE

By John Q. and Rose L. Burch

Shells of the family olividae are certainly among the most beautiful in form, color, and markings that we possess. Nevertheless, they attract comparatively little attention from the general collector. This is remarkable because the shells are extensively distributed over the globe, are easily collected, and easily procured by the collector at a moderate rate. We believe that this is due to the uncertainty with regard to the number of species, and lack of reference material.

It is difficult to define the limits of many of the species on account of the great variation in color, and the extraordinary manner in which the markings gradually change in their character, while other species are easily distinguished.

Linnaeus divided the shells we know as the olividae into three species, Voluta oliva, Voluta porphyria, and Voluta ispidula. Gmelin added a few, and Lamarck, who published a monograph of the genus in the "Annales du Museum" extended the number to sixty two. Dillwyn reduced them back to eighteen. Duclos, who published the plates of a monograph of the genus in 1835, figured eighty-four recent species, and he considered twenty-two of the species which Lamarck described as distinct, as only varieties of other species. In 1850 Lovell Reeve, in the Conchologia Iconica, published the figures of one hundred species. In 1858 J.E.Gray published "An attempt to distribute the species of Oliva into natural groups..." His work did not meet with general acceptance by authors. In 1870-1871 F.P. Marrat published the Monograph of the Genus Oliva in the Thesaurus Conchyliorum in which he described and figured many new species. In 1883 George W. Tryon published Vol.V of the Manual of Conchology which contains his monograph of the olividae. This was a monumental work, but Tryon was disposed to group related species to a greater extent than has met with the approval of most authors. Tryon reduced the number of the species to fifty five. Charles W. Johnson published a series of papers in the Nautilus from 1910 to 1915. Ph.Dautzenberg published in 1927 his Olivdes de la Nouvelle Caledonie et de ses Dependances, Journ. de Conchyliologie. Dautzenberg's work altered the conclusions of Johnson materially, and Johnson published additional papers in the Nautilus in 1928, more or less in rebuttal. Henry Dodge has published valuable date in Historical Review of the Mollusks of Linnaeus, Part 3, the Genera Bulla and Voluta of the class Gastropoda, Am.Mus.Nat.Hist.,Vol.107,Art.1,1955.

This is a brief comment on the major publications on this family. Our bibliography will list many others.

E.H. Mathews in Conchologist ii, p.144 states "The definition of what constitutes a species, -- and, still more, the rigid application of such definition-- will always remain a difficult task, so long as the personal element persists in him who defines."

A.H.Cooke in Cambridge Natural History, Vol.3,p.82 comments on variation as follows, "What seems to one authority ample ground for distinction of species, another may regard as of comparatively trivial importance. The practical outcome of these divergent views is sufficiently illustrated by the attitude of Mr.F.P.Marrat on the one hand,

and of what may be called the modern French School of conchologists on the other. Mr. Marrat held that the great genus Nassa of which more than 150 species are generally recognized, is one shell (species) in an endless variety of forms. The modern French school go to the other extreme, and apparently proceed upon the view that almost any difference in form, however slight, is sufficient to constitute a separate species. It will be generally admitted, however, that some structural difference in the organization of the animal (as distinct from that of the shell alone) is necessary for the permanent constitution of specific rank. What amount of structural difference is required, what particular organ or organs must exhibit this difference, will depend largely upon the idiosyncracy of the observer.(quote)...it will follow that a so-called 'variety' will be a form which exhibits differences from the type which do not amount to permanent structural differences in the organization of the animal. The final court of appeal as to what affords sufficient evidence for 'permanent structural differences' will have to be, as with Aristotle of old, the judgment of the educated man." (end Cooke quote)

F.P.Marrat made the following statement regarding the olividae. "Specific differences, confined within limited areas, constitute the exceptions, not the rule. In almost every case, where the shells can be obtained in numbers, they approach the so-called species above and below them, so as to render it a matter of uncertainty whether they should constitute a variety of the one or the other."(end quote)

In an effort to trace relationships between the species Marrat introduced many new names. Sowerby commented in Thesaurus Conchyliorum "In his study of the affinities, he has been led to register and nominally to admit as species many forms which will perhaps appear to readers as they do to the editor, quite indistinguishable."

W.K. Ford said of Marrat "Judged from the number of forms to which he gave names, Marrat might be considered a "splitter". Later, however, he stated that the 220 species of Oliva might, if carefully examined, be reduced to at most twenty, and the greater part of his own species reduced to varieties." (end quote).

The F.P.Marrat collection of shells of the olividae was purchased by the Liverpool Museum in 1875 and remain intact and available. The work of the late J.R. le B.Tomlin listing the species and designating the various type specimens was published by W.K.Ford in the Northwest Naturalist, September, 1953. Tomlin's comments are of a great value to the worker on this group.

Lamarck's types of the "Ann Mus." are in Caen. The Duclos collection in in the Geol.Soc.London. The Lovell Reeve collection of olives was sold at public auction at the Stevens Auction Rooms. A large part of the specimens were purchased by F.P.Marrat and incorporated into his collection.

All of the great collections of olividae remain intact in large public institutions. The type specimens representing the work of the leading scholars from Lamarck to date remain available to the serious student. These specimens were named and studied in good faith by recognized workers who did original investigation, and have been studied

by a host of serious authors who followed them.

It is tragical that we are asked by some to abandon such solid material, and accept fantastic references to a series of poorly drawn old wood cuts. Typical of these are some of those of Roding in the notorious Bolten Catalogue in which Roding listed as many as four references all to entirely different species, some of them admittedly unrecognizable, and the actual shell sold as a curio and lost. What the species may have been is known only to God.

We propose to publish in the Minutes a series of papers in which we will assemble the literature and our conclusions on all recognized species and forms of the entire family. These will not appear in systematic order, but we expect to conclude with an index, and if possible photographic plates of representative species.

It is our hope to correct some errors in the conflicting nomenclature now in general use, but we are certain to include other errors of our own. The advice of all is solicited, both on the taxonomy and the distribution.

We propose to recognize four major divisions, with others as subgenera: *Ancilla*, *Olivancillaria*, *Oliva*, *Olivella*
Genus *Ancilla* Lamarck 1799 Type (by monotypy) *Ancilla ampla* (Gmelin)
All sutures are covered by callus.
Genus *Olivancillaria* d'Orbigny 1839 Type *Oliva brasiliensis* (Chemnitz)
= *brasiliana* (Lamarck)

The difficulty involved in attempting generic divisions in the olividae is more or less the same as that in many other groups. It is a simple matter to define this genus on the characters of the type species, columella with a large posterior callosity, spife filled with callus, the suture between the body whorl and the spire alone being open. One may then describe *Agaronia* from the type species in which the sutural channels remain open on all whorls of the spire. Now is the time to pick up a tray of the species *O.gibbosa* or perhaps several others, and discover that you have the perfect connecting species with many of the characters of both of our generic divisions. Tryon, Man.Conch, Vol. V, 1883, was disposed to consider both as subgenera of the genus *Oliva*. However, Charles W. Johnson, Fischer, Thiele, and almost all authors with the exception of a few writers on the eastern Pacific have adopted Genus *Olivancillaria* d'Orb.1839 with *Agaronia* Gray 1839 as a subgenus.

Subgenus *Agaronia* Gray,1839 Like *Olivancillaria* in form, but the sutural channel remains distinct on all whorls of the spire. Type *Oliva hiatula* (Gmelin) designated by Swainson 1840.

Genus *Oliva* Bruguire 1789. Type species *Oliva porphyria*(Linnaeus) 1758.

On shell characters alone the generic distinctions between *Oliva* s.s. and *Olivella* are difficult to define. In general the species of *Oliva* are larger although there are many exceptions. *Oliva* has no operculum, and no epidermis.

In general, *Olivella* is distinguished from *Oliva* by the small size of its shell, its more produced spire, the presence of a thin, horny operculum, and the want of eyes. Nevertheless, some species of *Olivella* i.e. *Olivella nivea* lack an operculum (fide Olsson 1956).

Anatomical characters must be considered. The animal of *Olivella* is like that of *Oliva*, but tentacles and eyes are wanting, the foot is shorter, rounded behind and does not extend beyond the tip of the spire.

From *Oliva* species of *Olivella* are best distinguished by their radula. In *Oliva* (Olivinae) the radular ribbon generally shows but little variation, the differences between the species being small. The ribbon of *Oliva* is generally long and narrow with many rows of teeth (=100), while the rhachidian tooth is tricuspidate, its basal margin wide and often yoke shaped. In *Olivella*, the ribbon is short and wide, with fewer rows of teeth (generally less than 50), the rhachidian tooth is multicuspidate, the cusps being small and numerous.

Genus *Olivella* Swainson 1831 Type (by subsequent designation, Dall 1909) *Oliva purpurata* Swainson = *O. dama* Mawe.

Oliva oliva (Linnaeus) 1758 Systema Naturae ed.10, p.729, no.350
1767 Systema Naturae ed.12, p.1188, no.399
Locality: "In M.Indico"(1758-1767)

The identity of this species has been a contraversial matter from the time of Linnaeus to date. Our synonymy is partially covered on seven pages, and it seems to us that at one time or another our correspondents have sent something to us labelled with a good part of the names. No doubt the best known name is Oliva maura (Lamarck).

Dodge, Henry, Bull.Am.Mus.Nat.Hist., vol.107, Art.1,pp.71-74. Concluding a very thorough discussion, Dodge states "If restriction be necessary, I here restrict the name Oliva oliva to the form called Porphyria vidua by 'Bolten' Roding (O.maura Lamarck). The several other names applied to color patterns of the species may be retained as describing the other forms."

The synonymy and varieties are well listed by Dautzenberg, Ph.,Journ. Conchyl., 1927, Olivides De La Nouvelle Caledonie.. Dautzenberg states "The shape of Oliva oliva seldom varies; it is relatively a little elongated, its spire is very depressed, often even completely flat; a projecting callosity restricts, at the top of the columellar edge, a scanty canal. By contrast this species is remarkable for the richness and variety of its patterns and colors." "The typical coloration is a brilliant black which has attracted the attention of the old authors."

Reeve, Conch.Icon,Oliva, 1850, pl.7,species 10,a to g. Reeve figured this plate for Oliva maura (Lamarck), and in his listing of synonyms cited three of Lamarck's 1810 species, O.fulminans, O. sepulturalis, and O.funebralis, and also macleava and leucostoma of Duclos in Chenu, 1844-1845. These are all recognized color forms of Oliva oliva (L.) with the exception of O.funebralis and O.leucostoma. However, Reeve did recognize in all figures the details of the spire and shoulder of Oliva oliva L. Reeve's description of O.maura (Lamarck)= Oliva oliva (L.): "Shell oblong-ovate, thick, rather swollen posteriorly, contracted next the sutures, spire rather depressed, last whorl produced at the posterior end of the aperture into an erect callosity, columellar plaits somewhat flattened, lip subplicate; ash-carnelion, or dark olive or black, sometimes unspotted, sometimes mottled with brown angular streaks, or lightning marked, the streaks being interrupted,short sometimes amalgamated darker with two bands, columella white, faintly tinged at the base with blood-red, interior of the aperture bluish-white." "The Oliva maura is mainly distinguished by its constancy of form, having always the same tumid growth toward the spire, which is rather depressed, and the same produced callous production of the last whorl at the posterior end of the aperture."

Tryon discusses O.maura (Lam.)=Oliva oliva (L.) as follows: Tryon, Man.Conch.,Vol.V, p.78, pl.23,figs.21-26; pl.1,fig.5; pl.34,fig.54. "Light olivaceous, orange-brown, chestnut or chocolate, sometimes nearly black, often more or less distinctly banded with lines of different shades of the same color, the lighter colored specimens especially, frequently marked with chestnut zigzag lines and spots; interior of aperture and columella white; fasciole mostly colored with the prevailing tint. Length, 1.75-2.25 inches. Indo-Pacific and Austro-Pacific Provinces." (continued next page)

One of the commonest and most variable species of the genus. It may be distinguished from O.tigrina, which it often resembles greatly in painting, by its larger size and more cylindrical form."

Cottn, B.C., Family Olividae, No.6, 1955, fig.2 "Oliva maura (Lamarck) 1810, Chocolate, aperture white, upper margin of aperture a little produced. Two and one half inches. Broome, N.W.A."

Kuroda, Tokubei and Tadashige Habe, Check List & Bib. Rec.Mar.Moll.of Japan, 1952. The authors recognize Oliva oliva (L.) from Japan.

Dautzenberg, 1927, Journ.Conchyl.recognized the following varieties: var. albofasciata Dautzenberg, 1927 "We propose this name for a pretty variety represented by Duclos; Illustr.Conch.,pl.25,fig.4. The gray background covered with a compact and faint pattern is crossed by two decurrant white bands linked by little irregular black swatches." "We possess an example of unknown origin in which the coloration is darker with the light bands not so distinct from the background."

Var. aurata (Bolten) 1798 (not Link)
Dautzenberg, 1927 comments, "Of a uniform golden yellow to orange color, but in certain examples allowing traces of the pattern to be slightly visible. The shade varies from a bright yellow to greenish-yellow, brownish or grayish. Some of our specimens are of a uniform light gray."

Duclos, Illus.Conch,pl.25,f.10; Marrat, Thes.Conch.IV,pl.10,f.134
A beautiful set of this form in our collection was sent to us from Mossman, North Queensland, Australia. The collector assigned them to no species other than "The Golden Olive" accompanied by the following note which may be of interest. "They are only found on two of our beaches, and turn up at the rate of about two or three thousnad to one. We have put in hour after hour (mostly at night) looking for them, and have often come home empty handed as regards "the golden ones". Nobody knows their name except we think here they are a colour variation of our common olive. I have twenty four graduated from our common olive up the the beautiful golden one...." The common form referred to by our correspondent is typically of a dark chocolate color, and listed by most authors as Oliva maura (Lam.).

var. cincta Dautzenberg 1927
Dautzenberg, 1927 states "This variety is characterized by dark transverse lines detached on a background of light yellow, gray or brown. The number of these lines is extremely variable; in fig.2 of pl.365 of the Encyclopedia, we see only three, while in fig. 1 of pl.366, there are about thirty of unequal width. Between these two extremes there exists numerous intermediates." Distribution: Philippines (Hidalgo); Amboina (A.Koller). The author refers to a figure of Reeve,Conch.Icon. pl.7, sp.10e. We have a large set from Zamboanga, Philippines that match this figure of Reeve's in every way.

var. cinnamonea Menke Synopsis, p.76
This variety is of cinnamon brown color with irregular longitudinal zones of darker brown.

(continued next page)

may be the commonest and most vegetable species [illegible] genus. It may [illegible] from [illegible] [illegible] size and more [illegible]."

[illegible], D.C., [illegible] Olivine, No.6, 1956, [illegible] cordate, [illegible] one half inches, [illegible]

[illegible], Tokubei and [illegible] Check List [illegible]

[illegible] (193[illegible]) [illegible]
[illegible] [illegible] [illegible] this name for a [illegible] variety represented by [illegible] The [illegible] covered with a [illegible] [illegible] white [illegible] [illegible] [illegible] an example of unknown origin in which the [illegible] with the light [illegible] not [illegible]"

Var. [illegible] ([illegible]) [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] yellow, [illegible]
light-[illegible]"

[illegible]
A beautiful [illegible]
[illegible] [illegible] [illegible]
[illegible] species [illegible]
[illegible] [illegible]
[illegible] may [illegible]
[illegible] [illegible] [illegible] [illegible] the common olive. [illegible] as [illegible] the beautiful [illegible] [illegible] [illegible] by [illegible] [illegible]

var. [illegible] [illegible]
[illegible], [illegible] [illegible] [illegible] [illegible] one [illegible] of these [illegible] extremely variable [illegible] the [illegible] [illegible] [illegible] [illegible] about [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a [illegible] [illegible] [illegible] each this figure of [illegible]

var. [illegible]
This [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible]

([illegible])

var. *fenestrata* (Bolten) 1798
Dautzenberg, 1927 comments "This variety, based by Bolten on figure 502 of Martini, is distinguished from the variety *cincta* by the addition of horizontal lines which cross the vertical lines and form a trellis of quadrangular meshes. Vanatta instead of using the reference by Martini for the variety *fenestrata* has substituted that of Tryon, pl.23, fig.23, which represents an individual of the variety *cincta*."

var. Macleaya Duclos Monogr. G.*Oliva*, pl.21, fig.13, 14, 15, 16
Gray or yellowish gray, covered with lines and compact dots inconspicuous, sometimes broken by two unbroken transverse bands.

var. *rumphi* Dautzenberg 1927 Rumph.,Amboin,Rarit.p.119,pl.XXXIX, fig.4. "This variety which agrees with the description and illustration of Rumph, is ornamented with lines and black spots arranged in the axial plane of the shell."

var. *sepulturalis* Lamarck 1810
Dautzenberg, 1927 comments, "The name *sepulturalis* has been borrowed by Lamarck from the old literature. Rumph explains indeed that it means; *sepulturae* or *prinsebegrasffnia* (funeral of a prince), these olive like shells, ornamented with spots and black lines arranged in a manner to represent a theory of persons dressed in grand fashion and following the funeral. But Lamarck has cited as being his *O.sepulturalis* fig. 1 of pl. 365 of the Encyclopedia on which the pattern is arranged in transverse bands and not longitudinal, as in the figure of Rumph., while it is the variety b...which agrees with the figure. The name *sepulturalis* Lamarck should therefore be reserved for the variety with transverse bands and we propose for the variety with longitudinal swatches the name of var. *rumphi*."

Distribution: - A portion of the extensive material before us will be listed as follows: Typical, glossy black, Zamboanga, Philippines,Jan., 1954 (Robinson); Looc Bay, Lubang Island, P.I. (Pedro de Mesa 1935); Bombay, India; Tweed Heads, Australia (Thackaway); Buin, New Guinea, (Voyce), (exactly as figured by Reeve,Conch.Icon.fig.10d); Dingo Beach, Cape Gloucester, Queensland, Australia, June 1952; Pt. Douglas, Australia (R.Scott); Dalihikan, Taybas Prov., P.I. (Nitzi Natsumoto); Davao, P.I. (R. Fontecha, 1941); var. *albofasciata* Dautzenberg, Bowen, Australia, (exceptionally large) (L.Pearce1952); var.*sepulturalis* Lamarck, Mauritius; var. *macleaya* Duclos, Calapan, Mindoro, P.I.; var. *sepulturalis* Lamarck, Ceylon (Ex.Williams Coll.); large sets from Zamboanga, Philippines stated to have been collected in the Sulu Archipeligo which might range over to British Borneo containing specimens of most if not all of the described species; Madagascar; a large set from Buchans Point, North Queensland, Australia, had been labelled *Oliva mauritiana* Martini, but no question but that they are *Oliva oliva* - all of a uniform color pattern, chocolate, mottled, two banded, aperture bluish white, about 1½ inches; two sets from Mauritius had also been labelled *O.mauritiana* Martini Marrat, but these seem to be the typical black, another set from Zamboanga, P.I. are all apparently of the var. *aurata* (Bolten) containing specimens of a clear lemon yellow, orange yellow, and others shading into cinnamon yellow; a set from the Moluccas, typical, had been erroneously labelled *O.labradorensis* (Bolten); var.*fulminans* Lamarck, set selected to match this form from the Sulu Archipeligo.

Oliva sanquinolenta (Lamarck) 1810 Ann du Mus. XVI,p.316
Lamarck, Anim. sand vert., VII, p.426 Lamarck, Anim.sans vert,ed. Deshayes X, p.615.
Reeve, Conch, Icon, pl.13, figs. 25a,b; Tryon, Man.Conch.,p.79, pl.23 figs. 27-29, pl.24, figs. 30-33; Dautzenberg, Ph.,Journ.Conchyl,vol.71, 1927. The synonymy of this species is extensive. There was an attempt by some to assign this species to the Oliva variegata (Bolten). Ref. Johnson, Ch., Nautilus 24, p.67. Dautzenberg stated the objections to this name very clearly. Bolten's references are to a number of species and confused. Having failed to enlist any substantial number of followers to accept the name O.variegata, we are again asked to replace the well known name with Oliva reticulata (Bolten). The taxonomic problems involved are well stated by Ph.Dautzenberg, Olivides de la Nouvelle Caledonie et de ses dependances, Joun.Conchyl.LXXI,1927.

"Porphyria variegata has been based by Roding on the variety of Voluta oliva of Gmelin, which includes: first, an O.oliva L. var.Sepulturalis (Knorr.III. Pl.17.fig.3), secondly, an O.oliva type (Regenfuss;pl.I, fig.2) and thirdly, an O.oliva var. bifasciata (Martini,fig.474,and, besides, on figures 478 and 479 of Martini, which are Oliva sanguinolenta of light coloration (var.psllida). Variety a of this Porphyris variegata is based by Roding of figures 480 and 481 of Martini which represent Oliva episcopalis var. lugubris and upon the figure of Knorr (V.pl.19.fig.1) which is an Oliva oliva var. sepulturalis, ornamented with a yellow, transverse thread upon the middle of the last whorl.

Porphyria reticulata of Roding has for references, Voluta oliva var.X, established by Gmelin; first on pl. 739, fig.28 of Lister which is probably an O. sancuinolenta of light coloration. Secondly, on fig.3 of pl. XXXIX of Rumph, which is certainly an Oliva textilina Lam., and thirdly on figures 512 and 513 of Martini which represent a typical Oliva sanguinolenta.

Such an assemblage does not justify restoration of these names by Roding and seem more logical to us to maintain the name sanguinolenta, supported by three references; Lister, pl.739, fig.28, which is probably a sanguinolenta; Seba: Pl.53, fig.H1 and Martini: fig.512,513, which all agree with the description of Lamarck of which the terms: "columella of a strong red-orange, appearing like Bloodstained (sanguinolent," leave no uncertainty. The name viridescens borrowed from Martini by Morch, H. & G. Adams, Marrat, cannot be used, since this word in only a part of a descriptive phrase in the work of Martini.

Oliva pintamella which has been regarded by Weinkauff and Tryon as a variety of Sanguinolenta, has been figured by Duclos in 1835 (Monogr. pl.33, fig. 7&8). It is a shell of small size, short, of which the edge of the columella, verycallous is strongly folded in throughout its length; its aperture is narrow. In 1844 Duclos added for the same species two figures (Illustr.Conch. pl.35, fig.9, 10) which do not agree at all with the two previous ones, they represent a longer shell, with a larger aperture, etc. It is evidently these figures that Ducros de St-Germain has considered as representing yellow & discolored O. sanguinolenta. The true O. pintamella (fig.7, 8) seems to us to be a distinct species. Marrat has represented it; Thesaurus pl. XV, fig. 212, 213.

The design of typical O.sanguinolenta is composed of lines so close and confused that it nearly hides completely the background of the shell. Its last whorl is crossed by two blackish bands and its columella is of a beautiful blood red. This type has been well represented by Seas, Martini (fig.512, 513) Duclos (Pl.22, fig.16); Weinkauff (Pl.10, fig.4); Reeve (Pl.XIII, fig.25b); Marrat (fig.171); Tryon (Pl.23, fig.28).

We have no intention of attempting to circumvent or ignore the Museum Boltenianum. This was made nomenclaturally available by the famous or infamous Opinion 96 of the International Commission, However, reason would indicate that this work or any other work should be ignored when the references given are so confused that the matter becomes a matter of guesswork or personal opinion, and furthermore, when such guesswork is designed to replace scholarly descriptions thoroughly intrenched in the literature for close to two centuries.

At one time the writer made every effort to get a friend interested in the study of mollusks. He was at that time a colonel in the army, and his specialty was cracking the secret codes of potential enemies. As might be expected, his personal hobby was solving cryptograms. It is apparent that we need the services of all available talent of this nature to figure out what shell Bolten may have owned. The specimen sold, Roding's references, as usual to several figures of different species, often non binomial, and no one courageous enough to simply state that the figures are unrecognizable in many instances. Must we accept a subsequent reviser's wild guess on such a problem? Is there no defense of common sense?

Nevertheless, the purpose of this paper is to assemble the literature as we see it, with a sincere hope that our friends will give us the advantage of their opinions. If a majority of the serious students are disposed to accept O. reticulata, then, by all means, let us get together and use that name instead of the several now in general use. We attempt to present both sides of all controversies.

For the affirmative we may consider the following. Johnson, Charles W. Nautilus, vol.42, p.11,"While there may be some doubt as to O.variegata (Bolten), there is no doubt about O.reticulata and O.sanguinolenta as both Bolten and Lamarck refer to the same figures by Martini (Conch.Cab.,II, tab.48, figs.5-12, 5-13). I have therefore accepted Bolten's name." It is obvious that in this case Johnson assumed the role of first reviser. Kuroda and Habe, Check List and Bib. of the Rec.Mar.Molls. of Japan, 1952, p.74. The authors accept O. reticulata, but in some error have assigned it to Linnaeus. We consider the typical of this species to be characterized by being of a light olive color, minute close zigzag chocolate lines, two or three dark median bands, interior of aperture a fleshy white, and while tinges of red are frequently seen at the base of the columella in other species, in this species the red covers the whole of the columella and often extends to the callosity of the spire and along the outer lip.

Dautzenberg, 1927, discusses some of the color forms as follows.

var. azona Dautzenberg 1927
This variety differs from typical O.sanguinolenta only by the absence of transverse bands. Habitat - New Caledonia (Rossiter)

var. evanis Duclos Thes.Conch.fig.163
Reeve, Conch.Icon.,pl.13, fig.25a and 25b; Tryon,Man.Conch.,vol.V, p.79, pl.23, fig.29. Dautzenberg comments "Ducros de St.Germain says with reason that O.evania is but a variety of O.sanguinolenta with pale background and strongly banded. One can add that its pattern is much less closed that that of the variety pallida, and that its bands are composed of large isolated spots, sometimes nearly black."

This variety is white, reticulate with pale brown lines, with a subsutural and median band of dark brown markings.

Distribution: We have received large sets from Cebu, Philippines, with little variation, and all easily separable from the typical by having the pattern much less dense, the color lighter, the posterior callosity more of a pale orange than the bright red of the typical. However, we consider it but a local race, and an interesting study in color variation. Another set that should no doubt be referred to this variety was sent to us from Albany, West Australia (labelled O.viridescens Marrat) (in Syn.).

var. pallida Dautzenberg 1927
"This variety differs from typical O.sanguinolenta by its pattern covering less of the background, which gives a lighter aspect to the entire coloration. It is probably that it is this variety that Lamarck indicated as variety b "reticulo laxo", but these words can also apply to the variety evania Duclos, where the pattern is less close, and the same to the variety zigzag Perry (zebra Kuster), where it is still more open. Dishayes in the second edition of Animaux sans vertobres, has failed to make clear the question because he cites as references for Lamarck's var.b; born, var.S,Dillwyn var.1, which are both typical O. sanguinolenta. Then Quoy and Gaimard Pl.46, fig.5,6,which correspond well with our variety pallida, and finally var. zebra Kuster.

Distribution: New Caledonia (Rossiter, Bougier); Amboina (A.Koller); Solomon Islands (R.P.Wache); Rus-Sura, Solomon Islands (R.P.Abuin)."
This variety as we see it is white reticulated with pale brown lines. We have sets corresponding to this form from the Philippines.

var. zigzag Perry 1811 Perry, Conch. pl.XLI, fig.4.
"In this variety the pattern consists of longitudinal lines disposed in zigzags and isolated from each other, without decurrent bands."
Distribution: Amboina (A.Koller).

Distribution and Notes: Buin, New Guinea (Voyce,1958), two or more forms appear in this lot,one more obese, and the pattern is variable; British Solomons, Santa Cruz Island (Hoey);Bali(J.D.Dodd); Seychelles (H.Fulton) Jolo, Philippines (F.Talavara leg.1936,Bureau of Science); Luban Philippines; Zamboanga, probably including material from much of the Sulu Archipeligo, and containing specimens showing great variation.

var. [illegible] Duclos Thes.Conch., [illegible]
Reeve, Conch.Icon. [illegible]
p.14, pl.1, fig.29. Dautzenberg comments "Duclos [illegible] says with reason that O.[illegible] is but a variety of O.sanguinolenta with pale background and sparcely banded. One can add that the pattern is even less closed that that of the variety pallida, and that it is composed of large isolated spots, sometimes nearly black."

This variety is white, reticulate with pale brown lines, with a [illegible] sutural and medial band of dark brown markings.

Distribution: We have received large sets from [illegible], Phillipines [illegible] little variation, and all easily separable from the typical by having the pattern much less dense, the color lighter, the peristome callosity more of a pale orange than the bright red of the typical. However, we consider it but a local race, and an interesting study in color variation. Another set that should be referred to this variety was sent to us from Albany, West Australia (labelled L.miniacea Marratt) (in Syn.).

var. pallida Dautzenberg 1927
"This variety differs from typical O.sanguinolenta by its pattern covering less of the background, which gives a lighter aspect to the entire coloration. It is probably that it is this variety that Lamarck indicated as variety b "reticulo laxo", but these words can also apply to the variety [illegible] Duclos, where the pattern is less close, and the same to the variety zigzag Perry (zebra Kuster), where it is still more open. Deshayes in the second edition of [illegible] some variations, has failed to make clear the question because he cites as references for Lamarck's var. b: Perry, [illegible], which are both typical O.sanguinolenta. Then Reeve and Sowerby [illegible], which correspond well with our variety pallida, and [illegible] var. zebra Kuster.
Distribution: New Caledonia (Marratt), [illegible], Solomon Islands ([illegible]), Solomon Islands ([illegible])."
This variety as we see it is white reticulated with pale brown lines. We have sets corresponding to this from [illegible] the Philippines.

var. zigzag Perry 1811 Perry, Conch. pl. [illegible]
"In this variety the pattern consists of longitudinal lines [illegible] in zigzags and isolated from each other, without reticulations [illegible]
[illegible])."

Distribution and Notes: [illegible] (Duclos, 1835), two or more forms appear in this lot, no more [illegible], and the pattern is variable; [illegible], Santa Cruz Island ([illegible]); [illegible] ([illegible]) [illegible], Philippines (F.Talavera leg. [illegible] Bureau of Science); [illegible] Zamboanga, probably including material from much of the [illegible] archipelago, and containing specimens showing great variation.

Oliva erythrostoma (Meuschen) 1787 Mus. Geversianum, p.376
The literature pertaining to this species as well as others should be mentioned here. It seems needless to review the work of the early writers, because their species have been very thoroughly discussed by Charles W. Johnson, Nautilus, 1910, 1911, 1915, 1920, followed by Ph. Dautzenberg, Olivides de La Nouvelle Caledonie et De Sea Dependances, Journ. de Conchyl., vol.71, 1927. This contribution was followed by a review and rebuttal in a sense by Johnson, Nautilus vol.42, 1928. The changes suggested by Dautzenberg were due primarily to his adoption of the names of Meuschen 1787 in place of those of Gmelin 1790, and Bolten 1798. He also proved that many of Bolten's names represent composite species.

Having before us several thousands of actual specimens, it is our opinion that we should accept the work of Dautzenberg on most of the major differences of opihion. Dautzenberg considers *Oliva textilina* (Lamarck) and *Oliva tremulina* (Lamarck) to be recognizable distinct species. In this we concur. Johnson and others wished to incorporate these species as forms of *Oliva erythrostoma* (Meuschen).

The taxonomic problems are well stated by Dautzenberg, 1927 as follows: "*Cylindrus erythrostomus* has been founded by Meuschen upon references, all agreeing, of Lister, Gualtieri, d'Argenville, and Seba which prove its identity with *Oliva erythrostoma* (Lamarck). The name *miniacea* Bolten, more recent than that of Meuschen must fall into synonymy. The name *porphyretica* Martini, used by some authors, cannot be defended because it was not established according to the International Rules. Melvill and Standen have cited (Shells from Lifu, p.99) an *Oliva messaris* Duclos, which is perhaps a form of erythrostoma, but it is impossible to know exactly what species they intended to designate, so, since Duclos has described and figured as *O.messaris* two entirely different shells (pl.12, fig.o) which agrees with the description, is a large example of O.tremulina while the other (pl.22,fig. 7,8) half as large, is according to Ducros de St. Germain, who has seen the shell, a worn and discolored *O. erythrostoma*. *O.azemula* Duclos should also be nullified as it is based on O.ponderosa (pl.15,fig fig.1,2) and on an *O. erythrostoma* without bands (pl.15, fig.10,11). The figures cited by Meuschen are similar enough for us to say that typical *O.erythrostoma* is ornamentd with wavy longitudinal lines, and two transverse bands, more or less interrupted, encircling, one at the top, the other in the center of the last whorl. This species is so prone to variations of pattern and coloring that it is difficult to group the majority into varieties. Thus we will content ourselves by citing those which present some constancy."(End Quote) Our opinion is that this species is distinguished from *O.Tremulina*, its nearest ally, by the aperture being stained with deep red, and by being more swollen posteriorly beyond the center.

Typical *Oliva erythrostoma* (Meuschen) -Shells ornamented with wavy longitudinal lines, and two transverse bands more or less interrupted, encircling one at the top and one at the center of the last whorl. In all though, yellow white, streaked and banded with blue, green and purple. Aperture always a deep orange.

Distribution: New Caledonia(Rossiter, B.P. Pestre, E.Marie, R.P.Montrouzier); Isle of Pines (R.P.Goubin); (continued next page)

Mauritius (E.Marie); Oho-Shima (R.P.Ferrie); Loo-Choo Islands(Hirase); Amboina (A.Koller); Vavau Tonga Ids. (R.P.Deguerry, R.P.Doisy); Zamboanga, Sulu Archipelico (Marshall Sohl leg. 1948); Kii, Japan (note-this large set was sent to us from Japan labelled *Oliva erythrostoma tremulina* (Lamarck), but the shells are without exception of the typical form of *O. erythrostoma* with the bright red orange interior of the aperture. It is obvious that one of us is far afield in our concept of *O.tremulina* (Lam.); Loc Kii, Japan (Kanamaru leg.1939);Torres Strait, North Australia (perhaps these are slightly more obese than those from the Philippines); Cebu, Philippines; Siasi, Jolo, Philippines (Pedro de Mesa 1950); Florida Island, New Hebrides (Chauncey Pyle leg. 1943) (This race is consistently more obese, stouter, but otherwise indistinguishable from typical of the Philippines); Bruin, New Guinea (A.Voyce leg. 1957) (The stout form similar to those of the New Hebrides); Borneo; Barier Reef, Australia; Mortlock Island; Guam (J.D.Dodd 1940); Fiji (the stout form: Muratou Island, Darwin, Australia; numerous large sets from various localities in the Philippines.

Dautzenberg 1927 discusses some of the color forms:
var. *efasciata* Dautzenberg 1927 Tryon, Man.Conch.,vol.V,pl.26,fig. 53 "The name *azemula* having been given by Duclos to two different olives, and the one figured first being *O. ponderosa*, it is impossible to use *azemula* and the second (fig.10, 11). This last is the variety without bands of *O. erythrostoma* that we here designate as the variety *efasciata*."

Distribution: Guam (several sets); Davao, Mindanao, Philippines (R. Banks); Mindoro, Philippines (Ex. Dr. Fred Baker); Mauritius; Ceylon; Marshall Islands; Zamboanga, Philippines.

var. *johnsoni* Higgins Nautilus, vol. 33, p.58
"This variety, based on fig. 110 of Marrat is ornamented with large black blotches more or less angular which occur near the half of the surface of the shell. They do not particularly group themselves into transverse bands, but in certain individuals the black coloration spreads more and connects this variety with the variety marrati Johnson."

Distribution: Zamboanga, Philippines; Tutiula, Samoa (J.D.Bader,1937); Davao,Philippines. Note (This is the variety of dark brown to black color with large white markings.).

var. *marrati* Johnson Nautilus 28, p.99
This variety is entirely dark brown to black.

Distribution: Samoa (J.D.Bader 1937); Zamboanga, Philippines; British Borneo.

var. *saturata* Dautzenberg 1927
"In this variety the longitudinal lines are darker, more numerous and the bands are more colored, in such a manner that the entire shell has a much more somber aspect."

Distribution: Cebu, Philippines (A.Franco 1945); Zamboanga, Calapan, etc. P.I.

var. *sylvia* Duclos Monog.genus *Oliva*, pl.14,fig.10,11
"According to Ducros de St. Germain, *Oliva sylvia* of Duclos had been made with yellow individuals of *O.erythrostoma* (continued next page)

but which have absolutely nothing special. Nevertheless, figures 10, 11 and 12 of Illus. Conch. presents a pattern very distinct, consistent in lines running downward, and three continuous bands; figures 10 and 11 represent an orange shell, and figure 12 is entirely white. We may ask if this is an albino of the same variety" end. quote. It would seem that the shells generally assigned to this form are orange yellow with irregular lines, and two bands of brown usually smaller than other forms.

Distribution; We have sets that fit all characters from Zamboanga, Philippines, probably from the Sulu Archipeligo.

Oliva tremulina (Lamarck) 1810 Anim.sans Vert.,VII,p.420
Quoting Dautzenberg, Journ.Conchyl.,1927 " The only reference indicated by Lamarck for *Oliva tremulina* is the figure of Lister,pl. 727,fig.14. It is a shell of large size of which the background is yellowish white, is ornamented with wavy longitudinal lines and purplish-brown dots; its last whorl is crossed by two transverse bands of wide blackish dots. The inside of the aperture is fleshy white . *O. nobilis* Reeve, of which the dimensions are exactly those of Lister's figure, and of which the pattern is quite similar, thus falls into synonymy with typical *O. tremulina*. " End quote.

Inasmuch as *Oliva nobilis* is considered by Dautzenberg to be typical of *O. tremulina* a study of Reeve's figures and description is in order. Reeve, Conch.Icon.,pl.2,species 3,a,b,c. Quoting Reeve "*Oliva nobilis* - Shell elongately cylindrical, rather thick, most frequently with spire acuminately exserted, whorls somewhat contracted near the sutures and before the middle,columellar plaits not very numerous, the front ones rather strong; pale cream-color,reticulately three banded and longitudinally wave streaked with blackish-brown,columella and interior of the aperture carnelion cream color. Mauritius. In a genus of which the species are so nearly related, and the individuals of species so variously painted, opinions must differ greatly as to the value and limit of specific character. Although it has been my endeavor to restrict the number of species where an observation of many specimens shows them to have been founded upon varieties, I cannot bring my mind to believe that the shell under consideration , which has been referred many times to *O. tremulina* and sometimes to *O. erythrostoma* , belongs to either species. Not uncommon in collections and easy of recognition, it is uniformly of larger and more solid growth than its cogeners, and of a pale carnelion cream color, richly banded and blotched in network style with dark brown being blue clouded as in other species. M. Duclos gives a very characteristic figure of it under *O.erythrostoma* at pl.31,fig.7, and two rather indifferent figures of it under *O. tremulina*, at pl.11,figs. 5 and 7 of his monograph." End Reeve quote.

Oliva tremulina (Lamarck) remains a contraversial species, and the negative is well stated by Johnson,Charles W., Nautilus, vol.42, pp.8-9 as follows (as of var. *tremulina* of *O. erythrostoma*)" This differs from *erythrostoma* only in the color of the aperture, and in a large series it is impossible to draw a well defined line separating the two. There are also parallel variations in both, which, aside from the color of the aperture cannot be separated,another strong indication that we are dealing with only one variable species."
End Johnson quote.

It seems to us that the specimens before us labelled *O. tremulina* not only have a fleshy white aperture, but seem to be less swollen at the posterior or shoulder of the shells. They are otherwise close, and it is possible that Johnson may be correct. However, we consider them easily separable.

Dautzenberg 1927 discusses some of the color forms as follows.

var. *concinna* Marrat 1870 Thes.Conch.,IV,p.13,pl.VII, figs.100,101
" The variety *concinna* is of a uniform blackish-brown, or well sprinkled with a few unusually white spottings more or less triangular, One also sees occasionally, examples irregularly marked with brown and gray. *O. tenebrosa* Marrat, differs only by smaller size, which is insufficient to make another variety,as many examples are

met of intermediate sizes. It is wrong that Johnson has assimilated *O. concinna* with *O. pica* as these two shells are completely different Weinkauf has cited *O. concinna* in the synonymy of *O. zeilanica*. " End quote.
Distribution: New Caledonia (E. Marie); Lifu (Melvill and Standen); Mahe,Seychelles(de Joannis,Cherubin). A few of the sets before us at this time are: Ceylon, larger shells,lack the brown edge of the inner lip, marbled with brown and gray, seem to fit this form; Bougainville,Solomon Islands,shells of a uniform blackish brown, some with a few white spottings usually triangular; Zamboanga,Philippines, shells of all patterns of this form.

var. *chrysoides* Dautzenville 1927 Journ.Conchyl.,v.71
" This pretty variety is of a golden yellow or orange, solid colored or with a very faint pattern. Its slender form and high spire with open suture are very close to the variety *zeilanica*(Lamarck) Philippi from which it differs only in coloration. It can only be explained with difficulty that Reeve and Marrat have united it with *O. irisans* (Lamarck) Duclos, in which the flattened spire is entirely covered by a callosity. Duclos has cited with doubt as varieties of *O. tremulina* , the *O. obtusaria* and *O. hepatica* ,but it is impossible to identify these names of Lamarck, the descriptions of which are insuffieient and which are not accompanied by a reference.".
Distribution: Zamboanga Bay,Zamboanga,Philippines(J. Tapales,1937); Barrier Reef,Queensland,Australia, large shells more slender than those from the Philippines.

var. *fumosa* Marrat 1870 Thes.Conch.,p.13, pl.IX,fig.119.
" This variety is intermediate between typical *O. tremulina* and the variety *concinna*. The ground color is tawny gray and the dark and cloudy pattern gives the shell a smoky aspect. In certain examples, broar brown patches spread over much of the surface.The aperture is white and the lip is bordered with brown on the inside."

var. *zeilanica* Lamarck 1810 Anim. sans Vert.,VII,p.436
" *O. zeilanica* of Lamarck is very uncertain, but it has been interpreted by Philippi to be a shell differing from *O. tremulina* only by its pattern which instead of extending to the suture of the last whorl, stops some distance from the summit and leaves a united zone with a wavy contour in the open at the bottom."
Distribution: New Caledonia (Bougier); Glorieuses Illes (L.Bureau); Mauritius (de Robillard); Ceylon (Riquet); Philippines (de Tranqueleon); Japan (Bonnet). Sets before us at this time that seem to fit this form : British Borneo, per H.M.S. Alert(ex. G.A.S. Barnacle); Mauritius ;Zamboanga,Philippines. We have many beautiful sets assigned to this species, *Oliva tremulina* (Lamarck). These seem to be literally distributed throughout the entire Indo-Pacific as represented in the Burch collection. A large part of them are typical, and have heretofore been assigned to *O. nobilis* Reeve. A few localities of these will follow: Andaman Islands;Mt.Lavinia, Ceylon; Mauritius; British Borneo; Cebu,Tilic Bay,Zamboanga and other localities in the Philippines.

Oliva olympiadina Duclos Mon.Oliva,pl.12,figs.10 to 12
It is with considerable doubt that we place this species here. The magnificent shells from Mauritius before us will leave many incredulous at first when it is suggested that they be considered a mere form of *O. tremulina*, Reeve,Conch.Icon.,pl.3,species 5,a to d. One large set of shells at hand match Reeve's fig.5b perfectly. We

quote Reeve's comments in part as follows," Shell oblong cylindrical, thick, slightly contracted beneath the sutures, spire exserted, last whorl callously produced at the hind extremity of the aperture, columellar plaits more or less faint; white, somewhat obscurely dilutely reticulated with purplish brown, often very largely blotched with dark brown, columella and interior of aperture white. *O. olympiadina* is always to be distinguished by the pure white enamel of the interior and columella, which latter is always more callous." End Reeve quote.

Tryon, Man. Conch., p.80, pl.26, fig.50. Tryon is of little assistance in these problems other than the fact that he has many of the forms well figured. It is our opinion that Dautzenberg and others are correct when they state that Tryon confused his work by misunderstanding the identity of *Oliva irisans* (Lamarck).

Johnson, Charles W., Nautilus, vol.28, pp.98-99. Johnson states that *O. olympiadina* is an albinic form of *O. tremulina*, but again we must disagree at least to the extent of refusing to consider the shells before us albino. However, we have placed the species with *Oliva tremulina* (Lamarck).

Oliva textilina (Lamarck) 1810 Anim.sans Vert.,VII,p.418
Ph. Dautzenberg, Journ. de Conchyl.,vol.71,1927 ,discusses the taxonomy of this species as follows," Does the resumption of the name sericea , recommended by Morch,H. and A. Adams,Marrat,Johnson, Vanatta, and some others, really command attention ? It is permitted to doubt as much, since the references cited by Rodimg, that of Martini,pl.LI,figs.559,561 apply only to O. textilina . The other by Gmelin (sp.17,var.88) based on figure 489 of Martini, is,according to Pfeiffer an O. reticularis ,but we believe that it is rather O. tricolor because of the black points which adorn the upper whorls. It is not O. textilina in any event. Rodimg, not having furnished, other than these two references, any information permitting identification of O. sericea , it is impractical to substitute this name for textilina Lamarck which has been described and supported by four concurrent figures. In comparing O. textilina with O. tremulina ,one notices that its columellar edge is adorned up to the top of the aperture, by a thick callosity which spreads wider on the base; that the columellar plaits are stronger and less numerous. Its pattern is composed of a multitude of very fine intercrossed lines, which form a delicate network; the bands are also composed of very fine and closely knit lines. Finally, the inside of the aperture which is white in the background and barely flesh-colored at the base of the columella and along the lip in tremulina, is entirely colored light yellow slightly salmon in textilina." End Dautzenberg quote.
Reeve, Conch.Icon., pl.VI,species 9,a,b,c. Reeve's figures are excellent illustrations of typical O. textilina. We agree with this concept of the species. We quote Reeve's description and comment as follows," Shell oblong-cylindrical,rather broad,thick, spire rather short, last whorl produced into a callosity at the posterior end of the aperture,columellar plaits rather strong; carnelion white,painted throuhout with black dots and lines of dots, angularly reticulated,sometimes rather promiscous,ash-clouded, more or less darkly aggregated into two bands,columella and interior of the aperture carnelion. Hab. Islands of Ticao and Mindanao, Philippines (sandy mud in deep water); (Cuming). There is perhaps less variety in this species than in any other of the genus,the pattern consisting always of an angular ash-colored network of black dots, sometimes very regular and close set,but more frequently promiscous and confused in arrangement. The shell is generally of large size,thick, and rather broad,the last whorl rising upon the spire into a callosity." End Reeve quote.
Tokubei Kuroda and Tadashige Habe in Check List and Bib. of Rec.Mar. Moll. of Japan,1952, recognize and list O. textilina (Lamarck). Shintaro Hirase, Revised by Isao Taki, in An Ill.Handbook of Shells in Natural Colors from the Japanese Islands and Adjacent Territory, 1954, pl.113, fig.1 give a good color figure of O. textilina. Tetsuaki Kira in Colored Ill. of the Shells of Japan,1955,p.63, pl.31,fig.15 offers two clear color figures of the species under discussion. Tryon,Man.Comch.,p.80,pl.27,figs.59,60- Tryon confused this species with O. irisans in our opinion, and while we cannot agree with his assignment, the figures are good.
We quote Dautzenberg,1927 on the color forms of Oliva textilina as follows.

var. granitella Lamarck 1810 Ann.du Mus,XVI,p.314;Anim.sand Vert VII,p.424.
" Oliva granitella has been regarded by some authors as a distinct species, by others as a synonym of O. textilina, and by Ducros,

Weinkauf, and Elera a variety of that species. In comparing the descriptions of Lamarck, one sees that there are no transverse bands in *granitella*, while *textilina* offers two transverse bands more or less marked, composed of little brown lines, closed in zigzags and resembling the characters of script. One can thus suppose that *O. granitella* is a variety without the bands of *textilina*, but in the absence of all figuration, this interpretation remains doubtful."

var. *albina* Melvill and Standen Shell from Lifu,III,Journ. of Conch. p.404

" This variety, designated as being of an ivory white, without other characters, can have been created for an albino specimen of *O. textilina* as cases of albinism are known in many species of olives, but to be sure of its determination, it must be known in what sense *O. textilina* has been considered by Melvill and Standen, *O.textilina* (*sericea* Auct.), *tremulina*,*pica*,*ponderosa* etc. having often been considered as varieties of the same species." " As for *O. sericea* var. *albescens* of Johnson,Nautilus 28,p.99, this can only be an albino variety of *O. cryptospira* Ford, Johnson saying that the spire is callous."

Distribution of *Oliva textilina* (Lamarck) (from sets in the Burch collection)- Bougainville,Solomon Islands (A. Voyce,1957); Buin, New Guinea;Trincomalie,Ceylon (ex. G.A.S. Barnacle); Northern Australia (Per. H.M.S. Alert-Ex. G.A.S. Barnacle); Tweed Heads, N.S.W.,Australia (Thackaway,1936); Kii,Japan (several sets, all typical); Zamboanga, probably from the Sulu Archipeligo (G.P. Robincon) (These are the largest and finest we have seen ranging little short of four inches); Calapan,Mindoro,Philippines; and numerous other localities from the Philippines, Cebu, Bataan etc. Didtribution as listed by Dautzenberg in part- New Caledonia (Rossiter); Lifu (Melvill and Standen); Amboina (Ledur); Borneo (Lesourd); RuaSura ,Solomon Islands(R.P. Aubin).

Oliva ornata Marrat 1870 Thes.Conch.,p.13,t.7,figs.102,103
It would seem that perhaps the first author to fully appreciate the distinctive characters of this species was John Ford in 1891. The reference will be listed and quoted as follows. Ford, John, Nautilus,vol.4,11,135-136,1891 ," Oliva cryptospira Ford,1891 Shell cylindrical,slightly enlarged near either end,producing an obese appearance. Salmon-colored with a few dashes of white accompanied by faint zigzag brownish lines showing through the enamel, the latter being somewhat thickened and more orange in color on the basal fasciole. Spire short, with sutures entirely covered by a heavy callus. Edge of lip and interior of aperture white.Length of type specimen two and one quarter inches. Greatest diameter one inch. Habitat,Moluccas. Shell known by many as a form of O. irisans (Lamarck) . No figure was given with Lamarck's description of O. irisans , but a figure probably intended for the same shell appears in Reeve's Conchologia Iconica ,vol.VI,pl.6,fig.8a where it is classed with typical O. irisans. That this figure does not agree with Lararck's description in any essential feature is quite apparent." End Ford quote.
Dautzenberg,Journ.Conchyl,vol.71,1927 states ," It can only be explained with difficulty that Reeve and Marrat have united it (O. tremulina) with O. irisans (Lamarck) Duclos, in which the flattened spire is entirely covered by a callosity." End Dautzenberg quote. Tryon in Man.Conch. followed Reeve in this assignment. Kuroda and Habe,Check List and Bib. of Rec.Moll. of Japan,recognize Oliva ornata Marrat, and two subspecies, fordi Johnson and cryptospira Ford. Kira in Col.Ill.Shells of Japan,1955,p.63,fig.12 illustrates the species clearly.
The color of the interior of the aperture is not a constant character in this species. Specimens in the Burch collection from the Sulu Archipeligo, otherwise indistinguishable, have a white interior on the whole, but a certain percentage will range through light to deep violet. Specimens from Western and North Western Australia are predominantly with the violet aperture, but these produce a percentage with no trace of the violet. A set from the Loo Choo Islands, Japan, are all of the form cryptospira Ford, and have white interiors. Sets otherwise identical from British Borneo show the violet aperture. Sets from Ceylon and India seem to be identical with those from the Sulu Archipeligo. It would seem that the only advantage to be gained from the recognition of color forms is to give the reference to the writing of the authors in which they frequently add substantially to an understanding of the species involved. We will list below a few of the described color forms, but with these we see large sets of bright orange,dark chocolate,pure white and others plus intergrades into and out of all.

var. cryptospira Ford 1891 Nautilus ,vol.4,pp.135-136
This form was described in the discussion above.
Distribution: Calapan,Mindoro,Philippines; Loo Choo Islands,Japan; Zamboanga and other localities in the Philippines.

var. fordi Johnson 1910 Nautilus,vol.24 ,p.51
In the discussion of the varieties of O. sericea (Bolten) in Johnson's usage, the following is the original description of the above form," There is, however, a variation which is apparently peculiar to this race, which consists of the spire in the adult becoming covered by a callus. Three specimens that would otherwise be typical zelanica show this feature. This gradually merges into

a lighter colored form, often with a violet colored aperture constituting the variety ornata Marrat. A light yellow form with only a slight trace of the markings constitutes the variety, cryptospira Ford, which merges into a dark brown form resembling tenebrosa, see Thes. Conch. IV, pl. 9, fig. 126 (var. fordi n. var.)."
Distribution: Borneo, Zamboanga, Philippines; Ceylon.

var. albescens Johnson 1915 Nautilus, vol. 28, p. 99
Again in his discussion of the many forms of Oliva sericea in his concept of the species, Johnson states, " There is also a pure white, callous spired form (albescens)."
Distribution: Zamboanga, Philippines; British Borneo. This pure white albinistic form is not rare, and is represented by numerous sets in the Burch collection.

The race of this species from Western Australia and Queensland are largely of the form we consider typical. They are shells of one and one half to two inches, usually ivory in color with varying peppers of zigzag lines, ash to brown, columella white, aperture usually violet, occasionally white. However, there is a smaller race of a predominantly brown color. For some reason unknown to us this form is often received labelled variety sylvia, but we consider this an obvious error, because the shells are certainly not Oliva sylvia of Duclos. In any event the intergrades with the typical are numerous and we think it can have no possible systematic value.

Note from J.Q.B.- We have been uncertain about the number of readers of the Minutes who might be interested in detailed discussions of one family. The publication of all of our notes on the olives alone indicate a manuscript of hundreds of pages. Other families would be even larger. If we receive the advice and assistance of our fellow workers we will feel encouraged to continue. We are particularly interested in distributional data as well as adjusting the taxonomy.

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PUBLICATIONS RECEIVED

The following publications of the International Trust for Zoological Nomenclature have been received. It is my personal opinion that this work is excellent, and an encouraging move toward some semblance of stability. The publications are edited by Francis Hemming, assisted by Diana Noakes. All published in 1958, Quarto.

Official List of Family-Group Names in Zoology-First Installment Names 1-236.
Official Index of Rejected and Invalid Family-Group Names in Zoology- First installment: Names 1-273

Official List of Generic Names in Zoology- First Installment : Names 1-1274.
** An example of this work is as follows- Opinion 469- ...
1082 Beringius Dall 1886,Proc.U.S. nat.Mus.9 :304 (gender-masculine) (type species, by monotypy: Chrysodomus crebricostatus Dall, 1877, Prelim.Descr. new Spec. Moll.N.W. Coast Amer.:1 (Class Gastropoda).
*** This settles definitely the use of Jumala Friele 1882 etc. ending we trust , the confusion which has resulted in the use of different generic names by various authors.

Official Index of Rejected and Invalid Generic Names in Zoology- First Installment: Names 1-1169.

Official Index of Rejected and Invalid Specific Names in Zoology- First Installment: Names 1-527
Official List of Specific Names in Zoology- First Installment: Names 1-1525.

The Nautilus-Vol.72, No.1,July,1958 - List of papers follow:
The effect of nutrition on the color of the callus in Polinices duplicatus .By Harry J. Turner Jr.
Teratogeny in Australorbis glabratus . By E.H. Michelson and Ann H. Schork.
The land genus Microconus. By Fred G. Thompson.
Sphaerium nitidum and S. patella. By H.B. Herrington.
Feeding habits of two species of Odostomia By J. Frances Allen.
Helix pomatia colony at Jackson,Mich. By Henry van der Schalie & Dee S. Dundee
New records of West Indian Streptaxidae. By William J. Clench.
New land snail from Queensland. By Alan Solem
Life history studies of Campeloma decisum By Norman A. Chamberlain.
Radula and operculum of Vasum capitellium .By Germaine L.Warmke
Types of mollusks described by F.C. Baker.Part III ,Chicago Academy of Sciences. By Dorothea S. Franzen.

And in the notes and news, a short paper by Allyn G. Smith- Columella edentula in California. Mendocino County. A new record for the state.

Collecting at Guaymas,Mexico By Don Shasky

For sixteen days in June my family vacationed in Guaymas. This was my fourth trip, but only the second for my wife. I went diving almost every day and collected several species that I had never taken alive before including *Vasum caestus* ,*Terebra strigata* ,*Murex ambiguus*, and *Heliacus radiata*. Another species that I took in approximately six feet of water and about 1 to 1½ miles south of Punta Colorado is *Engina tabagoensis* Bartsch. I collected six specimens all under one rock. I turned over several hundred other rocks in the same area, but did not find any more. I have been told that this is a very great extension of range for this shell. Perhaps you could give us further information on this. Other species taken include *Zonaria arabicula* *Zonaria albuginosa*,*Trona cervinetta*, *Cyproterina pustulata*.*Morun tuberculosum*,*Terebra lingualis*, and many more varieties. We expect to return to Guaymas in December and during this time I expect to spend two or three days aboard a shrimp boat collecting from the shrimp nets as they are brought up.

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Publications

Carlos De La Torre y Huerta (Datos Biograficos) -Sociedad Cubana de Historia Natural " Felipe Poey". 1958. A beautiful tribute to the late Dr. De La Torre.

Basteria- Vol.22, No.2 en 3, Pag.21-68,15-VII,1958 The following papers are included-

J. Lever: Quantitative beach research.I " The left-right phenomenon" sorting of lamellibranch valves on sandy beaches.

L.J.M. Butot en W.H. Neuteboom: Over *Vertigo moulinsiana* (Dupuy) en haar voorkomen in Nederland.

W.S.S. van Benthem Jutting: *Conus gloria-maris* ,recently found in the Philippines.

C.O. van Regteren Altena: Faunistische aantekeningen ,5.*Pseudamnicla* confusa (Frauenfeld,1863) nieuw voor de Nederlandse fauna.

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Conus gloris maris Chem. By J.Q.B.

Reports of finding specimens of this extremely rare species has been the source of no little amusement to our establishment. It seems that every novice in southern California has hastily checked his collection to see how many he can find. The result is that we are offered some fine specimens almost daily. To date the sad facts are that the shells so called have been almost on the fantastic side. It seems as if almost every large series will produce something excitingly like a photograph of the species. We had one family phone long distance awhile back and make a special dash to our place to check their new *Conus gloria-maris*. We were compelled to advise them that the shell they had, an *Oliva porphyria*. was not even a cone, much less the great rarity.

I am sure that this is bad publicity for us. We should find that they had the rarity. The old story of the defeated king killing the slave that brought the bad news is recalled. Perhaps we should advise them to send their shell elsewhere, maybe Florida, to get the glad tidings.

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Two additional publications received from the International Trust for Zoological Nomenclature-- Official List of Works Approved as Available for Zoological Nomenclature--- and Official Index of Rejected and Invalid Works in Zoological Nomenclature.
This is another very welcome contribution.

MINUTES 182

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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News of shells and shell affairs should be mailed to the editor-
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We are now meeting at our regular time and place, the Los Angeles County Museum at 7:30 P.M., the first Tuesday of the month.

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The meeting of the American Malacological Union at the University of Michigan, Sept.2-5, will be discussed in more detail on page 29. The officers elected for the year 1958-59 are:
President- R. Tucker Abbott
Vice-President- Katherine Van Winkle Palmer
2nd Vice President- John E. Fitch
Secretary-Treasurer- Margaret C. Teskey
Publications Editor- George M. Moore
Councillors-At-Large-- John Q. Burch,Ruth E. Craine,Leslie Hubricht, Thomas E. Pulley.

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In this issue pages 2 to 26 Inc. are a continuation of the papers by John Q. and Rose L. Burch on the Olividae

The following is a continuation of the papers on the olives by John Q. and Rose L. Burch

Oliva ispidula (Linnaeus) 1758 Systema naturae, ed.10,p.730,351
Systema naturae, ed.12, p.1188, no.400
Locality: Not given in either edition.
According to Henry Dodge in A Historical Review of the Mollusks of Linnaeus,pt.3, Bull.Am.Mus.Nat.Hist.,vol.107,art.1,1955,pp 74-77, the species known for the past two hundred years as Oliva ispidula (Linnaeus), is not the species of Linnaeus which is now thought to have been Olivancillaria hiatula (Gmelin) or a fossil shell of similar form. Dodge proposes that the name Oliva ispida (Bolten) be accepted because of the similarity of names. Of course, we have no assurance that this will not be merely the forerunner of a series of fantastic guesses at what other contemporaries of Linnaeus may have given a name. We propose to simply state the reference and will accept the suggestion of abandoning the work of centuries with great reluctance. It has been known that a large part of the species of Linnaeus, being based upon poor or unrecognizable drawings of antiquarian works, cannot be determined with certainty. Therefore, is it not better to retain the concepts of the overwhelming majority of scholars from Linnaeus to date ? Generations of authors have described and figured this species. The synonymy is extensive. The figures and discussion given by Lovell Reeve in Conch.Icon.,pl.17,species 34, figs.a to k, are excellent. Tryon in Man.Conch.,vol.V,p.86,pl,33,figs.24-43,29,28,32 , gives a clear statement. Tryon's description and comments follow, " White,ash, yellow,brown,chestnut or chocolate colored,without markings, or with nebulous spots, zigzag lines or reticulations, often with a band near the top of the body whorl;columella white;interior chocolate colored. Length 1-1.5 inches. Indian Ocean,Philippines, Fiji. ..It is impossible to enumerate the shades and patterns of coloring of this species; its chocolate colored interior is the most characteristic feature, whilst the form is also tolerably constant. Banded varieties may be recognized by the band being on the upper part of the whorl, but not attaining the suture." End Tryon quote.
The synonymy is understandably extensive. We will mention some of the described color forms. It is possible that a few of these may be valid subspecies, if they should seem to constitute a separable race from one locality.

var. algida Vanatta 1915 Nautilus, vol.29,p.71
Dautzenberg,1927, stated " The following varieties are not sufficiently distinct; var. algida Vanatta, based, but with doubt, on a figure of Reeve,Conch.Icon.,pl.17,fig.34i." End quote. Nevertheless, there are others who have accepted this as a variety, and Reeve's figure is clear. The shell is a bluish white with light brown longitudinal streaks, a yellow brown lip , and a shorter than usual spire. A brown and white callus is seen in the posterior corner of the aperture.

var. candida Lamarck 1810 Enc. Meth.pl.360,f.4
It is doubtful if this is a variety of O. ispidula (Linnaeus) . Dautzenberg states in his discussion of the variety lacteana ,"This variety has been confused by many authors with Oliva candida based by Lamarck on figures 4a and 4b of the Encyclopedia, but these figures represent a much shorter and fatter olive than any example of ispidula; and also the aperture is white on the inside."End quote.

Nevertheless, there are others who have accepted this form.Henry Dodge ,1955, lists it as a recognized variety stating ," an albimo form with the aperture more orange than brown."

var. *flaveola* Duclos 1845 Duclos in Chenu 1844-1845
Dautzenberg,1927, states," Duclos has represented under this name , four shells of different color, but according to the description this variety is light or dark,yellow or orange, the others being of unusual modification. In this variety the interior of the aperture is frequently whitish or rose, but we possess several specimens where it is dark brown." End quote. Quoting Dautzenberg again in his discussion of typical O. *ispidula* , it is stated " The dark brown coloration of the aperture nearly always permits identification of this species. Nevertheless, one variety, *flaveola*, which can be regarded as albinistic, has an aperture of light brown to almost white." End Dautzenberg quote. Henry Dodge,1955, states," a yellow form with a white aperture."
Distribution: There are sets in the Burch collection from the Marshall Islands showing variations from light to dark as mentioned by Dautzenberg that could be assigned to this variety. Dautzenberg lists the distribution as follows: New Caledonia (Grasset); Calcutta (de Tranqueleon); Philippines (Hidalgo).

var. *gratiosa* Vanatta 1915 Nautilus, vol.29,p.71
This is a doubtful variety, and we have failed to recognize it. Vanatta's description is brief and without references as follows, " Shell slender,dark brown,spire elevated,columellar callus cream-white." Henry Dodge,1955, states," a dark brown, slender form with an elevated spire. It is possibly the form which Lamarck called O. *oriola* ,although the spire is considerably higher.The columella callus is cream-white."

var. *jayana* Ducros de St.Germain 1857 Rev.Crit.,p.68,pl.II
Dautzenberg,1927, states," *Oliva jayana*, described as a distinct species by Ducros, is only a variety of *ispidula*, very close to *tigridella* Duclos, having a slender body and short spire,its pattern is formed of very fine lines composing a condensed network of small triangular meshes. Ducros himself admits that he considers his species as doubtful since it is near to *ispidula*." End Dautzenberg quote. Henry Dodge,1955, lists *jayana* as follows, " white or flesh-colored with fine longitudimal brown lines and two or more less prominent bands of irregular markings."

var. *lacteana* Dautzenberg 1927 Journ.Conchyl.,vol.71,1927
Dautzenberg states, " external coloration entirely white,without pattern,aperture brown. This variety has been confused by many authors with *Oliva candida*.." End quote.
Distribution: A large series from Ceylon in the Burch collection contains specimens that fit the description in every way, but the gradation into other forms is obvious.

var. *longispira* Bridgman 1906 Proc.Mal.Soc.Lon.,vol. VII,p.195
Dautzenberg,1927, states," This variety differs from typical O.*ispidula* by its much more elevated spire." Henry Dodge,1955, comments, " a name given to a high spired form which Johnson believed to be identical with the latter's *samarensis*."
Distribution: Cebu,Philippines (Sowerby and Fulton);Luzon Island, Philippines.

(con.)

var. martini Dautzenberg 1927 Journ.Conchyl.,vol.71,1927
Dautzenberg describes this variety as follows," This pretty variety, whitish or flesh-colored, is ornamented at the top of the last whorl with a transverse orange band."
Distribution: Several sets in the Burch collection that may be assigned to this variety, but all are associated with other forms. One clear example is from Hikkadawa,S.W. Coast, Ceylon, ex. G.A.S. Barnacle.

var. oriola Lamarck 1810 Anim. s.Vert,VII,p.432
Dautzenberg,1927, states of this variety, " Oliva oriola of Lamarck is a black variety of ispidula of which the interior is usually lighter and sometimes nearly white. The external black coloration is not always uniform. It is often blended with white spots more or less widespread, which in certain specimens occupy half the surface. Duclos has represented under the name O. oriola several dark examples of Oliva reticularis." End quote.
Distribution: One set in the Burch collection contains specimens that may be assigned to this variety from Balong,Calapan,Mindoro, Philippines, ex. Pedro de Mesa. Other localities are, Sumatra(Weyers); Philippines (Hidalgo).

var. samarensis Vanatta 1915 Johnson MSS in Vanatta,Nautilus,vol. 29,p.71.
This name was listed without reference or description and is questionable on all counts. However, the name is in use by some for a high spired reticulate form. We have sets in the Burch collection from several collectors. One from Lubang Island,Philippines (Pedro de Mesa) is probably this form if it can be recognized.

var. stellata Duclos 1845 Duclos in Chenu,1844-1845
Dautzenberg,1927, states, " This variety is ornamented with little lines or dots more or less disposed in zigzags; it is devoid of a transversal zone." Henry Dodge,1955, lists the variety as follows;, " a white form with broad coarse brown markings and a shorter spire than in most forms of this species."
Distribution: An interesting series from Puri,India in the Burch collection, contains specimens of this color form, and would fit the figure of Reeve,Conch.Icon.,pl.17,fig.34d, being ivory white marked sparingly with dashes of violet brown. However, other color forms are taken from the same locality. Other specimens may easily be selected from extensive sets from Zamboanga and other localities in the Philippines.

var. taeniata Link 1807
A form stated by Link to be distinguished by the dark,unicolored band at the upper end of the last whorl. This description is far too inadequate, and it is our opinion that the name should be ignored.

var. tigridella Duclos 1845 Monog.Genus Oliva,pl.8,figs.,13,14
Dautzenberg,1927, states, " This variety differs from the variety stellata by its pattern composed of numerous punctations,sometimes isolated,sometimes close together and aligned longitudimally in zigzags. The background is yellowish gray, rather dark." End Dautzenberg quote. Henry Dodge,1955, lists this variety with the comment, " fawn colored with dark spots.". End quote.
We do not accept all of the findings of F.G.Bridgman, Proc.Mal.Soc. Lon.,vol.6,p.187,1905, but his notes on this name may be of interest. We quote Bridgman as follows," This species (O. tigridella) was

figured but not described by Duclos in his monograph of the genus (Hist.nat.Coquilles,*Oliva*,pl.viii,figs.13-16) .Figs. 13,15, and 16 have been reproduced by Tryon (Man.Conch.,vol.V,pl.33,figs.28,29,42. It has hitherto been considered by Reeve ,Weinkauf,Tryon and others, a variety of *Oliva ispidula* Lamarck ,but if a careful comparison be made,it will be seen that the two forms are very distinct. *Oliva ispidula* is more cylindrical, in length nearly 2½ times its breadth, and as a rule much larger than O. *tigridella*, which is more fusiform and quite different in its proportions. It is also to be observed that in O. *ispidula* the markings often take the form of transverse bands, whilst if any lines are observable in O. *tigridella* they are invariably longitudinal. Many specimens of O. *ispidula* have a single band round the upper part of the body whorl.O. *tigridella* more nearly resembles O. *duclosi* Reeve (*jaspidea* Duclos) , than any other species, both in size and form,whereas O. *ispidula* is most like O. *litterata* Lamarck in form, although different in size." End Bridgman quote.
Distributiom: The varietal name *tigridella* has been extensively used by collectors with the result that a great many sets so labelled are contained in the Burch collection. A few of the localities listed by Dautzenberg are: Pondichery(Bouge); Bangkok(Vignal); Cap.St.Jaques (Deyrolle) ;Philippines (Hidalgo);New Caledonia (Rossiter, Bougier).
Some of the sets in the Burch collection follow: Roebuck Bay,Western Australia (G.A.S. Barnacle); Hervey Bay, North Queensland, Australia; Balong,Calapan,Mindoro,Philippines (Pedro de Mesa); Bhuket,Thailand (Dr. Creder,1955)(This set is much more slender in form than those with the same markings from Australia and the Philippines); Mission Beach,Australia (a uniform set, ash color with brown dots- probably of this variety).

Other variations have been listed by many authors. Typical of some of these is a comment by Dautzenberg as follows," Sowerby has cited in the catalogue of the Tankerville collection an O. *ispidula* "testa subfusca...", which is an accidental deformity comparable to the variety *annulata* Gmelin of *Oliva emicator*." End quote.
A few distributional notes from sets in the Burch collection follow: Davao,Philippines (specimens in this lot are very large for the species, many reaching one and one half inches. They are consistently white with the markings of O. *stellata* Duclos; Zamboanga,Philippines (No doubt many of the specimens labelled from this locality are taken throughout the Sulu Archipeligo. We have variable lots including many of the described color forms as listed above, and we are inclined to think that we have intergrades of almost every character. These specimens also vary greatly in height of the spire, and obesity); Calapan,Mindoro,Philippines(an odd set , ex.Pedro de Mesa)(banded at both extremities of the body whorl with a solid dark band); Mt. Lavinia,Ceylon (A slender race here, but of many color variations- Ex. G.A.S. Barnacle;Hikkadawa,S.W. Coast,Ceylon, (This set is composed of specimens both large and stout for the species); Bentota,Ceylon;Bali,Indonesia (Ted Dranga,1940); Marquesas Islands; Bhuket,Thailand;Townsville,Australia (Jim Bailey);Broome, Western Australia; Kings Beach, Bowen,Australia; Mission Beach, Australia;Pudukurchi,Travancore,India; Puri,India; New Caledonia; Elizabeth Islands;Mortlock Islands; many localities throughout the Philippines.

Oliva bulbosa (Bolten) 1798 Museum Boltenianum,p.34
Porphyria bulbosa

It is to be regretted that the vagaries of the system seem to indicate no escape from abandoning the name *Oliva inflata* (Lamarck), under which this well known species has been known for a century and a half, and replacing it with the reference to the Bolten Catalogue. It is needless to add that all of the following references to the literature are the work of authors who knew the species as *Oliva inflata* (Lamarck).

The taxonomy and the color forms are mentioned by Charles W. Johnson in Nautilus,vol.24,p.65. We quote Johnson as follows," Both Bolten and Lamarck refer to the same figure by Martini (Conch.Cab.,II,tab. 47,figs.507,508) which represent specimens having undulating longitudinal stripes of brown. (Hence, we must accept this form as the typical). Specimens with only the small uniform bluish-gray spots constitute the variety *inflata* Lamarck. When two revolving dark lines are present, the variety *bicingulata* Lamarck. When the bands fuse and cover irregularly the greater portion of the shell they represent the variety *fabagina* Lamarck. The latter is figured by Marrat as " crassa" Martini. Pure white examples are also frequently observed." End Johnson quote. Tryon,Man.Conch.,vol.V,p.75, pl.19,figs.68-70; pl/20,figs.71-76. We quote Tryon as follows, " Shell swollen,becoming gibbous in the middle in old specimens, the spire partially sunken below the edge of the body whorl,the latter produced behind,with a heavy callous deposit; outer lip sometimes enormously thickened;fasciole with a heavy callous ridge, independent of the columellar plaits; color white or yellowish,more or less dotted,blotched or lightning streaked with brown orange, chestnut,chocolate or bluish ash,sometimes variegated with two or three colors at once,sometimes almost or entirely covered with dark color,occasionally pure white;aperture white within.Length, 1.5-2 inches. Red Sea;Ceylon; E. Africa;Madagascar;Seychelles. The variability of this species in color is exceedingly great. When old, the best characters are derived from the inflated form,sunken spire, callous thickenings and columellar ridge; but less developed specimens are so close to some of the succeeding species that their determination seems somewhat doubtful. *O.lacertina* Quoy(figs.75,76) is a peculiarly colored young shell." End Tryon quote.

Reeve,Conch.Icon.,pl.15,species 31,a to f. Reeve gives a clear explanation including various color forms, and lists the locality Zanzibar.

Briefly, the form of the species is very characteristic,swollen gibbous growth,fasciole with a heavy callous ridge which is independent of the columellar plaits.

Inasmuch as most of the many large sets in the Burch collection from various localities seem to contain specimens of all of the described color forms, it seems futile to consider them in greater detail. Distribution in part in the Burch collection: Porto Amelia, Mozambique;Zanzibar;Mauritius;Suez;Natal,South Africa;Tanga,Tanganyika;Singapore;Bali,Indonesia;Borneo;Red Sea.

Oliva tigrina (Lamarck) 1810 Anim.sand Vert.,vol.VII,p.432
Ph.Dautzenberg discusses the taxonomy in Journ.Conchyl,vol.71,1927, as follows," Meuschen(Mus.Geversianum,p.370) has created a Cylindrus tigrinus , supported by three figures representing olives,but of which none is determinable. The name has no meaning, and cannot void the name tigrina Lamarck, since it has not been used under the same generic name. Marrat has replaced tigrina Lamarck with holoserica Martini, a substitution which cannot be accepted as the nomenclature used in the first volumes of the Conchylien Cabinet is only occasionally binomial. Furthermore,in the present case, the words Cylinder holosericus are used as part of a descriptive phrase. Finally,Martini's species is based on four figures of which only one (fig.475) concerns the species in question, while the others (figs. 507 and 508) represent O. undata Lamarck and the fourth (fig.502) is fusiformis Lamarck. According to Ducros de St.Germain, who has examined the type of Duclos, Oliva othonia is a young specimen of O. tigrina Lamarck. It is impossible to identify in a satisfactory manner,Oliva glandiformis Lamarck (Anim. sand Vert,VII, p.427), which is, for some authors , a variety of O. tigrina .Its description is quite insufficient, and is not accompanied by any reference, and the variety associated by Lamarck (Girol-Adanson), is an entirely different species and already preceedingly named O. flammulata by Lamarck himself. Oliva tigrina Lamarck is based on the figure 475 of the Conchylien Cabinet,which represents a shell swollen about the top, with short spire, of which the pattern is composed of numerous greenish gray punctations and with a few groups of short brown lines; its band is ornamented with black spots, but most specimens are destitute of lines and black spots on the band and the background is a tawny gray instead of white." End Dautzenberg quote.
Reeve,Conch.Icon.,pl.12,species 21, describes the species as follows, " Shell cylindrically ovate, swollen in the middle, rather inflated, spire short,last whorl callously produced at the posterior end of the aperture; columellar plaits more or less faint; ashy-white, profusely mottled with small blue gray spots, sometimes covered entirely with black brown,columella faintly tinged at the base with a tinge of blood red,interior of the aperture bluish white. Hab. Madagascar. Distinguished mainly by its swollen growth,being uniformly of larger size than the preceeding species (O. elegans Lamarck), and by its livid gray aspect of color, except when altogether black-brown, as it not infrequently is." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.76 comments as follows," The markings are similar to varieties of the preceeding species (O. bulbosa-by Tryon O. inflata) from which it is doubtfully distinguished by its less inflated form,spire not so muhh sunken,fasciole without the callous ridge. As in ' bulbosa', the color varies, but not so frequently,perhaps; I figure a dark hued specimen (fig.78). O.glandiformis Marrat (fig.80), is at least identical as to the figure I copy;the two additional figures given by Marrat appear to be more similar to O. elegans Lamarck." End Tryon quote.
Charles W. Johnson discusses this species in Nautilus ,vol.24,p.64 as follows," This species is distinguished from (vidua macleaya by Johnson, but Oliva oliva (Linnaeus) in being less cylindrical in outline with the sutural callus less elevated. The normal form has maculations or bands of dark brown which often become suffused and cover the entire shell,this extreme variation (var.fallax n. var.) masquerading in many collections under the name of O.maura (≛ Oliva oliva (Linnaeus). The usual form of O. tigrina is without

(con.)

the brown bands or maculations,only the small bluish gray dots showing. In large senile specimens the spots often become obsolete or wantimg on the last third of the body whorl. The dark forms figured by Marrat as O. *glandiformis* (fig.174) approach closely (as in the case of O. *elegans*) forms of O. *funebralis* (Lamarck). The *glandiformis* (Lamarck) , if recognizable, would take precedence over O. *tigrina*, but the figure referred to by Lamarck in Adanson's Hist.Nat.Senegal,pl.4,fig.6, is not recognizable." End Johnson quote.

Distribution: Large sets in the Burch collection from Zanzibar, Mozambique,Mombassa,Madagascar, and other east African localities, show little variation other than in color because all seem to contain a percentage of the black (var.*fallax* Johnson 1910) with the typical. We also have them from various localities in the Philippines,Mauritius and New Caledonia.

Oliva emicator (Meuschen) 1787 Museum Geversianum,p.370
Ph.Dautzenberg,Journ.Conchyl.,vol.71,1927 . Dautzenberg discusses the taxonomy as follows," There is no reason to prefer , as has M. Johnson,the name *amethystina* (Bolten) to the older *emicator* , for the references given by Meuschen all apply to this species.The catalogues of Meuschen and Roding have, in short, equal value. We express our regret to be compelled by the rules of nomenclature, to abandon the name *guttata* Lamarck, which agrees so well with the olive in question. We do remark,however,that the name *amethystina* can in no case stand as it has been preceeded by *annulata* Gmelin. Typical *Oliva emicator* is ornamented with round,purple spots,fairly regularly spaced, on a clear flesh-colored background. One observes , below the suture, a row of very short black spots. The background of the aperture is yellow orange." End Dautzenberg quote.
Tryon,Man.Conch.,vol.V,p.74,pl.19,figs.64-67. Tryon described the species under the name *Oliva guttata* (Lamarck) as follows,"Cream to flesh color, with large or small bluish ash colored spots varying to chestnut or shaded with both colors; suture and fascioles spotted or streaked with chocolate or violet;interior of aperture orange red. Length 1.5 -2.25 inches. Indian Ocean,China, Philippines, Polynesia,Madagascar,Zanzibar." End Tryon quote.
Reeve,Conch.Icon.,pl.14,species 30. Reeve described the species under the name *Oliva cruenta* Dillwyn.
Dautzenberg,1927, discusses the color forms of the species as follows.

var. *annulata* Gmelin 1791 Systema Naturae,ed.13,p.3441
" This has been cited by Dufo from the Isle of Alphonse, by Gray from the Isle of France, and by Hedley from Queensland,but it must be quite rare, as we know it only from the figure of Lister and that of Martini, the last having been copies in the Encyclopedia and by Wood in the Index Testalogicus. We can consider O.*annulata* as an accidental deformity, characterized by a protruding ring encircling the middle of the last whorl. Its coloration is entirely white. *Oliva leucophaea* Lamarck is an absolute synonym and one asks himself why Lamarck substituted the name for *annulata* even though he cites it among the references to his species. Mr. Vanatta cited as representing typical O. *annulata*, fig.b of pl.16 of Duclos and fig.60 of pl.V of Marrat, of which both figures represent a yellow orange shell without any spot and without a ring in the middle of the last whorl. This interpretation is completely wrong, since it is especially the ring which characterizes the variety *annulata* of Gmelin." End Dautzenberg quote.
Distribution: We are disposed to think that this form is not as scarce as Dautzenberg thought. Numerous specimens in the Burch collection from Zamboanga,Philippines (G.P. Robinson,1956) have every described character,white inside and out, with the protruding ring. However, it may be well to consider the fact that there are other sets with identical protruding rings, but on specimens of the typical color. One such lot is before us from the Mortlock islands. We think that the protruding ring is of no systematic importance.

var. *carnicolor* Dautzenberg 1927 Journ.Conchyl.,vol.71,1927
" Background yellowish white,without spots,dorsal region of the last whorl reddish pink." Weinkauf. " It is the coloration that Mr. Vanatta has indicated as being typical of *O. annulata*."

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[illegible]

[illegible] olive in general [illegible] regularly [illegible] of the [illegible] species [illegible] to flock [illegible] spotted or [illegible]

[illegible]

[illegible] as an occasional [illegible] encircling the [illegible] white. Olive [illegible] middle of [illegible] every [illegible] Islands, [illegible] importance.

[illegible]

Distribution: The Burch collection contains some large sets from Zamboanga,Philippines of a solid light pinkish orange color,otherwise they would fit the above description. Perhaps they are of another color form.

var. *nebulosa* Dautzenberg 1927 Journ.Conchyl.,vol.71,1927
This variety was figured by Reeve,Conch.Icon.,pl.14,species 30g as *O. leucophaea* Lamarck. The spots have the character of scattered triangular blotches, and the ground is frequently of a ruddy tinge.
Distribution: Philippines (Hidalgo)

var.*alba* Sowerby Cat.Tankerville,p.86
Shell entirely white inside and out.
Distribution: Mauritius;Guam; Zamboanga,Philippines.

var. *intricata* Dautzenberg 1927 Journ.Conchyl.,vol.71,1927
" This variety, distinguished by Lamarck, differs from typical *O. emicator* by its pattern composed of a compact confusion of little brownish lines,sprinkled throughout with black dots. The white background appears between the meshes of the network in the shape of little gaps more or less triangular.
Distribution: NosyOBe(E. Marie);Philippines (Hidalgo);Amboina (A. Koller)." A good figure of this form is shown in Hirase, Ill. Handbook Shells of Japan,pl.113,fig.5. There are sets in the Burch collection from Japan and from Zamboanga,Philippines that seem to fit this form.

var. *mantichora* Duclos Monog.Genus *Oliva*,pl.15,figs.7,8
" The variety *mantichora* presents at the top of the last whorl,an angle more or less pronounced. Its pattern and coloration resemble those of the variety *intricata*, but one also finds examples of which the background is more open. Marrat has represented (Thes.Conch. pl.v,fig.59) an individual in which the keel,situated lower down, tends to approach the variety *annulata*, but this keel is blunt and does not have the aspect of a ring."
Distribution: Glorious Isles (Bureau);Rua-Sura,Solomon Islands (R.P. Aubin).

Distribution of the typical or mixed and intergrading forms in the Burch collection: Tahiti;Choiseul Island,Solomons;Guam;Milne Bay, New Guinea; Marquesas;Mauritius;Zamboanga,Philippines; Cabra Island, Calapan,Sala Pt.,Lubang,Cebu, and other localities in the Philippines; Admiralty Islands.

Oliva episcopalis Lamarck 1810 Anim. sans Vert,VII,p.422
Ph.Dautzenberg in Journ.Conchyl.,1927, discusses the taxonomy of this species. We quote Dautzenberg as follows," It is trully an unfortunate idea that H. and A. Adams and Morch had of reviving for this species the name caerulea of the Museum Boltenianum.Indeed, of three references cited by Roding, the one of Martini(pl.48,fig. 518) is the only one which agrees with O. episcopalis. That of Gmelin (Voluta oliva,var.X) is based on three figures; Lister (1) (pl.739).fig.28) which is O. sanguinolenta; (2) Rumph (pl.39,fig. 3),which is O. textilina ;(3) Martini(pl.48,figs.512,513) which is O. sanguinolenta. Finally, the third reference by Roding;Rumph (pl.39,fig.5) represents O. tricolor or O. elegans, but certainly not O. episcopalis. In order to avoid more confusion, we reject the name caerulea and maintain episcopalis consecrated by long usage. Lamarck has given as references of O.episcopalis ; Lister, (pl.719,fig.3) and Gualtieri (pl.23,fig.F), which are both covered with scattered punctuations,mingled with a few little black specks. This is the typical pattern, but in certain examples, the spots are grouped in such a manner as to form two interrupted bands,situated one at the top, the other about the middle of the last whorl. In others the pattern is transformed into longitudinal undulations. Oliva atalina and quersolina Duclos, have been stated by Tryon to be discolored O. episcopalis. Ducros de St.Germain, while agreeing that quersolina is a discolored state of O. episcopalis, is of the opinion that O.atalina is a distinct species. We share his opinion because,despite the resemblance of the pattern in atalina and episcopalis ,the background of the aperture is always white in the first and purple in the second." End Dautzenberg quote.
Tryon,Man.Conch.,vol.v,p.74,pl.18,figs.59,60;pl.19,figs.61-63, describes the species as follows," white with chestnut spots and maculations having ash colored shadings, and sometimes indistinct ashy bands; interior of aperture deep violet. Lengtj 1.5-2.25 inches. Indian Ocean,North Australia,New Caledonia to Central Pacific. Constantly distinguished by its violet interior." End Tryon quote.

Reeve,Conch.Icon.,pl.13,species 24 a to d. Reeve figures two specimens of the typical and two of the dwarf variety lugubris Duclos,and described the species as follows," Shell rather elongately oblong; very thick,spire exserted,sharp at the apex,columellar plaits strong; white,promiscously painted with blue and saffron red clouded dots and short interrupted lines, sometimes darkly variegated with livid olive,interior of the aperture very deep violet. A species of very solid growth,prominently distinguished by the very deep violet coloring of the interior." End Reeve quote.

Distribution as listed by Dautzenberg: New Caledonia (Rossiter, Bougier);Isle of Pines (R.P. Lambert); Lifu (Goubin);Isle Glorious (L. Bureau);Madagascar to Tuleer,Ankifi, and in the Bay of Tsimimo eaika (G. Petit);Nosy Bay (D. Dupuy,E. Marie);Mauritius (de Robillard); Seychelles (Cherubin); Amirantes (Cherubin);Amboina (A. Koller);Rua-Sura,Solomon Islands (R.P. Aubin); Vsvau,Tonge Islands (R.P. Doisy).
Distribution based on some of the sets in the Burch collection: Zanzibar,Mozambique;Viti,Fiji;Mauritius;Marie Louise Island,Admiralty Islands;Tutiula,Samoa;Bali,Indonesia;Bougainville, Solomon Islands; Kenya Coast,E. Africa; Darnley Island,Torres Straits, Australia; Broome,Western Australia;Cebu,Zamboanga and other localities in the Philippines. (con.)

Dautzenberg,1927, discussed two forms of the species as follows.

var. lugubris Lamarck 1810 Anim.sans Vert.,VII,p.426
" The variety lugubris differs from typical episcopalis by its coloration being darker throughout. Its pattern,much more marked, runs into zigzags and large blackish brown spots. In certain individuals, the brown color overruns nearly all the surface, not allowing sight of the white background which takes the shape of little isolated spaces. Distribution: Amboina (Ledru)."

var. emeliodina Duclos Illust.Conch.,p.30,pl.21,figs.19,20
" According to Ducros de St.Germain, Oliva emeliodina is a variety of O.episcopalis of peculiar form. Indeed, the figure of Duclos represents a shell of rather small size,short with a spire very little elongated when compared with an ordinary O.episcopalis. We have never met with a specimen agreeing completely with the original figure, although we have seen intermediates."

Oliva carneola (Gmelin) 1791 Systema Naturae, ed.XIII,p.3443 Ph.Dautzenberg,Journ.Conchyl.,vol.71,1927, discusses the taxonomy pf the species as follows," Oliva carneola is either short or elongated,either swollen or cylindrical;its spire constantly covered with a thick callosity which completely hides the callosity of the superior whorls,that of the last whorl alone being free. The pattern and coloration give this species a great number of modifications, and change so often during growth that it is impossible to place the shells into determined varieties.We must content ourselves in naming only the most characteristic ones. Figure 495 in the Conchylien Cabinet, upon which Gmelin based his species is very poor,but one can still recognize that it concerns a shell with a reddish background crossed on the last whorl by bandsrunning downward of a bluish gray; hence this coloration may be regarded as typical." End Dautzenberg quote.

Lovell Reeve,Conch.Icon.,pl.22, species 60,figs.a to f,describes the species as follows," Shell oblong-cylindrical,spire short; ivory-white,thickly reticulated with light purple,posterior edge of the last whorl dotted,then shell thickened,swollen round the middle,columellar plaits somewhat faint,banded with bright orange-carneliom. Hab. Philippine Islands (at depths varying from ten to sixty fathoma);Cuming. This species varies from the oblong--cylindrical purple-netted state represented at Fig.60,a,b,to the stout rich orange-carnelion banded state at Fig.60e, the latter being probably an overcoating of the former. In the specimen figured at 60,d,c,a mixture of these patterns and colors is represented,in which the purple net-work of the former state is seen beneath a layer of the carnelion enamel of the latter." End Reeve quote.

Tryon,Man.Conch.,p.87,pl.33,fig.52 describes the species as follows, " White,banded with rich orange color,the bands usually a broad one above and below and a narrow one in the middle,color sometimes shading into red,violet or olive;fasciole and aperture white. Length .7-.9 inch. Java,Philippines,New Caledonia,Central Polynesia." End Tryon quote.

B.C. Cotton, Roy.Soc.Australia,No,6,Fam.Olividae, places the species in the genus Galeola Gray 1858 with O. carneola(Gmelin) ,type species. Two other generic names are placed in the synonymy of Galeola, Galeolopsis Rovereto 1899, and Galeolella Cossmann 1899. Cotton's comment for his fig.8 is, " White, banded with orange. One inch. Darwin."

var. coccinata Dautzenberg,1927 Journ.Conchyl,vol.71,1927
" Of a nearly uniform red, the bands visible (See Duclos,Illus. Conch.,pl.28,fig.8). New Caledonia (Lammens); New Hebrides(Bougier) Amboina (A. Koller).
var. candidula Dautzenberg 1927 Journ.Conchyl,vol.71,1927
" Bands barely visible at the beginning of the last whorl and dissapearing completely thereafter (see Duclos, ibid.,pl.28,fig. 12,16." Lifou (R.P. Goubin)
var,bizonalis Dautzenberg 1927 Journ.Conchyl,vol.71,1927
Red background,crossed to the middle of the last whorl by two white bands rather large and close. This variety,well marked,is the most common one occuring (Duclos,Illust.Conch.,pl.28,fig.13 New Caledonia(Rossiter,Lemmens*;New Hebrides (Bougier);Philippines (Sowerby);Fiji Islands (Layard,Cullieret);Shortland Ids.(Hervier); Rua Sura,Solomon Islands (R.P. Aubin).

var.*unizonalis* Dautzenberg 1927 Journ.Conchyl,vol.71,1927
" Red backgrouns crossed by one large white band to the niddle of the last whorl(Duclos,Illus.Conch.,pl.28,figs.6,14).
New Caledonia (Stuer);New Hebrides(Bouvier);Rua Sura ,Solomon Archipeligo (R.P. Aubin).
var. *trichroma* Dautzenberg 1927 Journ.Conchyl,vol.71,1927
" Differing from the variety *unizonalis* by the presence, at the summit of the last whorl, of a deep purple band at the suture, which imparts to the shell a three colored aspect.
Philippines (Sowerby); Amboina (A. Koller).
var. *adspersa* Dautzenberg 1927 Journ.Conchyl,vol.71,1927
" Irregularly sprinkled with numerous small white triangular flecks, rather conspicupus . New Hebrides (Bougier);Philippines (Sowerby); Oho-Shima (R.P?Ferrie).

Distribution : Inasmuch as many or all of the described color forms appear in most of the large series from all localities , it seems futile to attempt a division of them. Some of the many sets in the Burch collection follow:Zamboanga,Philippines (The interior of the aperture of this species is consistently white, but some of the specimens from Zamboanga are lavender within, otherwise indistinguishable); Kii, Japan;Saipan (Fowler); Bali(Ted Dranga); Okinawa (Jaeger); Mortlock Islands; Coral Sea;Fiji Islands (G.A.S, Barnacle, Hattie Gemmel); Palompon,Leyte,Philippines (Ex. Natl. Mus.); Cebu and other localities in the Philippines.

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Oliva athenia Duclos 1835 Monog.Genus *Oliva*,pl.26,fig.17,18 (excl. figs.19,20). Dautzenberg,1927,Journ.Conchul,vol.71,discusses the taxonomy as follows, " Oliva athenia is a well defined species, characterized by its squat form,its spire nearly flat and mucronated in the center. Nevertheless, it has often been misunderstood, Duclos,himself,after correctly representing it on pl.28,fig.17,18, has added under the same name,figures 19 and 20 which are of *O. lepida*, and afterwards under the names of *mucronata* and *faba*.Tryon considered it a synonym of *O. sidelia*.

Typical *O. athenia* is ornamented with longitudinal blotches standing out clearlyin zigzags on a tawny background. These blotches are either separated or approximate. In certain examples they stand out on a dotted or obscurely reticulated background.
Hab.-Lifou (R.P. Goubin);New Caledonia (Rossiter,Engler); South Australia;Andaman Islands;China;Fiji Islands." End Dautzenberg quote.

This species has, indeed, been the source of much disagreement. Reeve placed it in the synonymy of *O. carneola*. Charles W. Johnson in Nautilus,vol.24,p.66 remarks under *O. mustellina* Duclos " *O. athenia* Duclos resembles this species in miniature." End quote. Johnson's comment might be in order if one failed to note the spire. We consider it distinct. Most of the specimens in the Burch collection were labelled *Oliva faba* Marrat now placed in the synonymy of *O. athenia* Duclos.

Oliva tessellata Lamarck 1810 Anim.sans Vert.,VII,p.430 Tryon,Man.Conch.,p.87,pl.33,fig.51 describes the species as follows," Creamy white to yellowish brown,with irregular shaded spots covering the surface;interior and columella deep violet. Length 1 inch. Maldives,Java,Philippines,Australia,New Caledonia." End Tryon quote.

Reeve,Conch.Icon.,pl.20,species 53,describes the species as follow s, " Shell ovate,thick,short spire,sharp at the apex,columellar plaits rather broad;yellow,sparingly spotted with purplish black,columella and interior of aperture intense purple violet. Hab. Island of Ticao,Philippines: Cuming. This well known species stands alone in the genus,there being no other allied to it in respect to its characteristic style of painting." End Reeve quote.

B.C. Cotton,Roy.Soc. So.Australia,No.6,Olividae,1955. Cotton places the species in genus Neocylindrus Fischer,1883 (type species, O. tessellata Lamarck), " Yellow,spotted with purple,aperture and columella deep violet. One and one half inches.Thursday Island, North Australia.

Dautzenberg,1927,Journ.Conchyl,vol.71,comments on the taxonomy as follows," Dillwyn,Wood, and Marrat have taken the name tigrina Meuschen for this species,but it is an evident error as no reference cited in the Museum Geversianum relates to O. tessellata. Oliva tessellata varies only by the number of punctuations of which its surface is ornamented. In adult samples they deviate more rarely on the end of the last whorl. The dark purple of the interior of the aperture is constant." New Caledonia (Sutor);Amboina (A. Koller);Rua Sura,Solomon Islands (R.P. Aubin,1909);Shortland Islands,Solomon Archipeligo (R.P. Hervier)." End Dautzenberg quote.

Distribution from some of the sets in the Burch collection: Admiralty Islands;Bougainville,Solomon Islands; Albany,West Australia (Ex.G.A.S. Barnacle);Hope Island,Australia;Darnley Island, Torres Strait,Australia; Torres Strait (Jim Bailey,1949); Pt. Douglas,Queensland,Australia; Zamboanga,Philippines.

Oliva duclosi Reeve 1850 Conch.Icon.,pl.19,species 44
The original description by Reeve follows," Shell somewhat conically ovate,thick,swollen round the upper part,spire exserted,columellar plaits rather large;orange yellow,thickly reticulated with olive-brown,the spaces of the network being rather distant and sharply triangular,columella and interior of the aperture orange yellow. Hab.Banguey,Island of Luzon,Philippines (on the sands at low water); and Society Islands (in coral at low water); Cuming. The network coloring of this species is so thickly developed as only to leave scattered sharply triangular spaces. Sometimes,however, it is much confused." End Reeve quote.

Kuroda and Habe,Check List and Bibliography,1952,recognize this species from Japan,

Tryon,Man.Conch.,vol.V,p.85,describes the species as follows,"Shell with close reticulations and triangular markings of chestnut,with narrow,interrupted sutural and median bands,aperture yellowish brown. Length .9-1.25 inches. China,Philippines,Australia,New Zealand,Polynesia. O. flammulata Lamarck is too closely allied to varieties of this species; I have hesitated to separate them. O.lentiginosa Reeve (fig.14), is merely a lighter-colored specimen; O. esiodina Duclos (fig.15), and O. natalia Duclos (fig.16) are also synonyms,and I suppose that O.sandwichiensis Pease (fig.17), may also be added. This is the O. jaspidea Duclos (not Olivella jaspidea of Gmelin), under which name it is generally known is that of Reeve." End Tryon quote.

We are disposed to not accept all of Tryon's synonymy, and to admit Oliva sandwichiensis Pease as a recignizable species.

Distribution (fide Dautzenberg 1927): New Caledonia (fide Colonel Martel); Papeete,Tahiti(Cullieret,1890);Fiji Islands (P. Jolly); Marquesas Islands (Dr. Daniel);Oliva duclosi has also been cited from China,Philippines,New Guinea,Australia,New Zealand. Its existence on the West Coast of America : Mazatlan(Carpenter) and Panama (Yates) demands to be confirmed.
There are sets in the Burch collection from Tahiti, and others from old collections labelled Society Islands.

Dautzenberg,Journ.Conchyl.,vol.71,1927 discusses the taxonomy and synonymy of the species, and accepts two of the described species as varieties. We quote Dautzenberg as follows," According to Ducros de St.Germain, O. natalia of Duclos is typical of O. duclosi but blighted and discolored,and is figured enlarged, too red, and embellished to suit. The same author considers O.stainforthi Reeve to be a squatty form of the variety lentiginosa."

var. lentiginosa Reeve 1850 Conch.Icon.,pl.19,species 45,a,b
The original description by Reeve follows," Oliva lentiginosa-Shell oblong,somewhat cylindrical,thick,spire exserted,columellar plaits rather large,short;yellowish white,freckled with light purple-ash,encircled beneath the sutures and round the middle with promiscous blackish spots,columella and interior of the aperture yellowish white. " End Reeve quote. Hab.?
Distribution: Oshima,Japan (Hirase);Gulf of Bengal (Theobald)

(con.)

var.esiodina Duclos 1835 Duclos in Chenu,Ill.Conch.,p.18,pl.16,figs. 19,20.
Dautzenberg,1927, states of this variety," Shell very thick with spire exceptionally elevated, which we know only from the figures of Duclos, of which one has been reproduced by Tryon.Its coloration is very clear, and its pattern inconspicuous.Ducros says rightfully that the name esiodina ,being older than duclosi should be given the species,but that having been assigned to the little distributed species,he has preferred the name given by Reeve." End Dautzenberg quote.
In conclusion, on O.esiodina Duclos, we have failed to locate even one locality record. The variety or species is questionable, but it is obvious that if it is possible to determine the identity of O.esiodina, and that it is conspecific with O. duclosi ,the name of Duclos has priority. It would seem advisable to dispose of the matter now rather than involve another possible shuffle of names in years to come.

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Oliva sandwichiensis Pease 1860 Pro.Zool.Soc.Lon.,1860,p.145
Spencer Wilkie Tinker in Pacific Sea Shells,1958,describes this species as follows," This olive exhibits the characteristic shape of the members of its family. It is roughly cylindrical in shape with a smooth exterior surface and with a spire which is short and pointed. The shell varies widely in color,intensity and pattern. It is usually yellowish white in color, and is marked with chestnut brown blotches.The aperture is yellowish brown. It varies in length from one to one and one fourth inches. The species inhabits the Hawaiian Islands. Some regard this shell as a variety of O.duclosi Reeve,a species which is distributed throughout Polynesia,along the coasts of Australia,China, and through the Philippine Islands and the East Indies." End Tinker quote.

It is our opinion that the species is distinct and is endemic to the Hawaiian Islands. The relationship to Oliva duclosi Reeve is apparent in the yellowish color of the aperture and the shape. In compating the specimens in the Burch collection, we note some characters that seem to be consistent. Oliva sandwichiensis has two well separated dark bands on the inside of the outer lip.This is not to be seen in any of the specimens of O. duclosi. Another consistent character seems to be the row of fine dark marks around the body whorl immediately under the suture of O.sandwichiensis . All of our specimens of O. duclosi seem to show a consistent pattern to the suture.

Note- We have been unable to locate a copy of the original description by Pease in our library. A copy of it will be appreciated if it is available in the library of one of our correspondents. We have but two short sets of Oliva sandwichiensis and these indicate little or no variation. Furthermore, all of our specimens of O. duclosi seem to be from Tahiti and the New Hebrides. We would appreciate the priviledge of studying specimens from such localities as Indonesia,China,Philippines etc.

Oliva sidelia Duclos 1835 Monog.Genus *Oliva*,pl.19,fig.1,2
Duclos.Ill.Conch.,p.23,pl.21,fig.1,2 -New Guinea
Ducros de St.Germain,Rev.Crit. Genus *Oliva*,p.69-New Guinea
Marrat,Thes.Conch.IV,p.20,pl.XV,figs.231,232 (copy of fig.of Duclos)
Tryon,Man.Conch,vol.V,p.87,pl.33,fig.27,44 "

Dautzenberg,1927, Journ.Conchyl.,vol.71 discusses the taxonomy as follows," Tryon has united under the name *O. sidelia* ,*O.volvaroides* Duclos,*athenia* Duclos,*mucronata* Marrat,*lepida* Duclos, and *faba* Marrat, and *todosina* Duclos. We share his opinion for *sidelia*,*volvaroides*, *lepida*, and *todosina*, but in our opinion *athenia*,*mucronata* ,and *faba* constitutes a distinct species, more squat, with a more depressed spire and closely mucronated in the middle. Its pattern is much more plain and darker; finally,*sidelia*,*volvaroides*,*lepida*, and *todosina* have the last whorl separated by a suture greatly canaliculated, while in *athenia*,*mucronata* and *faba* the suture of the last whorl is deep but very tight.

We find ourselves in the presence of two distinct species: *sidelia* and *athenia*. It is regrettable that we must adopt the name *sidelia* which was created for a young shell whereas *volvaroides* ,*lepida*,and *todosina* apply to adult specimens, but *sidelia* having been cited before the others by Duclos, the law of priority will not permit us to act differently.

The type of *O. sidelia* is a shell of 10 mm. in length,white,with faint violet undulations, and having on the dorsal region, a large brown spot which occupies nearly the whole length of the last whorl, except a white zone close below the suture. This coloration must be infrequent as Marrat and Tryon have copied the figure of Duclos. Weinkauf has given three figures of *O. sidelia* ,but this interpretation is difficult,this author admitting that they are not elongated enough, and that the relation between the height and width is not exact. "

var. *lepida* Duclos 1835 Monog.Genus *Oliva*,pl.25,fig.15 to 20
Distribution: Lifu (R.P. Goubin) young examples; Mauritius,Glorieusses Ids. (L. Bureau); Maha,Seychelles (Cherubin de Joannis);Admirantes;China,Philippines,Mariannas,Tiur Ids.,Saleh Bay,Shortland Islands,Solomon Archipeligo (R.P. Hervier).

var.*todosina* Duclos 1835 Monog.Genus *Oliva*,pl.25,figs.9,10
This variety has been based by Duclos on *O.lepida* of which the pattern and especially the middle band of the last whorl are darker. Habitat-California,indicated by Duclos is certainly erroneous.

var.*volvaroides* Duclos 1835 Monog.Genus *Oliva*,pl.25,figs.11 to 14
The type of *O. volvaroides* represented by Duclos,pl.27,figs.11 and 12 is of a coffee and cream color with some transverse lines hardly visible;his fig.13 is a variety entirely white, and his fig.14 of a uniform blackish-brown,is so similar to fig.20 inscribed as a variety of *lepida* that one might be tempted to believe that these two figures had been made from the same shell. While maintaining *O. volvaroides* as a species,Ducros says " The study of a great number of individuals from diverse localities will authorize perhaps its reunion with *lepida*."
Distribution: Gloreusses Ids.(L. Bureau);China (Sowerby);Mauritius (Ex.Coll.Eayay);Mahe,Seychelles (Scherubin);Shortland Ids.,Solomon Archipeligo (R.P. Hervier). "

Reeve,Conch.Icon.,pl.22,species 59 figures and describes *Oliva volvaroides* Duclos. The Burch collection contains but one small set from the Solomon Islands.

Oliva elegans Lamarck 1810 Ann,du Mus.,xvi,p.312
Reeve,Conch.Icon.,pl.12,species 20,a,b,c, descbibes the species as follows, " Shell cylindrically ovate,rather swollen in the middle, spire short,last whorl produced into an erect callosity at the posterior end of the aperture; greenish or yellowish-white,sharply promiscously waved with olive green or brown-black streaks,clouded with blue and saffron red,cclumella faintly tinged at the base with a blush of blood red,interior of the aperture bluish white. Hab. Feejee Islands. ...This species is chiefly distinguished from those which accompany it on the plate (O.tigrina and O. tricolor) ,by its shorter and more tumid growth, and the erect callous production of the last whorl upon the spire, which is proportionably depressed. The specimen represented at fig.a is promiscously waved with dark green broken streaks,clouded with blue and saffron red; that of fig.b,c presents the same coloring overlaid with a profusion of rich brown zigzag streaks." End Reeve quote.
Tryon,Man.Conch.,vol.v,p.76,pl.20,figs.81-83;pl.21,figs.84-88. Tryon describes the species as follows," Shell olive, or brownish yellow,closely covered with zigzag lines or punctations, or both , varying from chocolate to nearly black, and frequently shaded with orange, and bluish ash; sometimes there is an overlaid darker series of crowded zigzags forming two irregular bands, or even almost covering the shell;fasciole tinged with saffron color. Length 1.5-1.75 inches. Indian Ocean to Central Polynesia... Generally smaller,darker colored and not so much inflated as O. tigrina ,but I have hesitated long whether to treat it as a synonym of that species or as distinct; its characteristics are certainly insufficient. I am compelled to place here as synonyms several so-called species which have heretofore been considered distinct,but the large number of specimens before me covers every grade of variation between them; the tinted fasciole appears to be a feature common to all. These synonyms are O.flava Marrat (fig.83),O. infrenata Marrat (fig.84), and O.hemiltona Duclos (fig.85). " End Tryon quote.
Charles Johnson,Nautilus 24,p.65 states," This species though smaller, has the more cylindrical form and elevated sutural callus of ' Oliva oliva ' (vidua of Johnson). Light colored examples with bright salmon-colored fasciole resemble in a general way ' sanguinolenta ' (variegata of Hohnson) . It also has a similar range in color to the latter species, and lacks the dark fulvous and melanic forms of ' Oliva oliva' (O. vidua of Johnson),Small dark specimens on the other hand are often very close to specimens referable to funebralis Lamarck. O. tricolor Lamarck seems to be a good species and not a variety of elegans." End Johnson quote. Note- Tryon considered O. tricolor a variety of O. elegans,but this conclusion has not been generally accepted.

Distribution as noted from some of the sets in the Burch collection: Fiji Islands; Mossman Heads,100 mi.N. of Cairns, North Queensland, Australia;Bombay,India; Florida Island,New Hebrides; Zamboanga, Davao,Calapan,Cebu, and other localities in the Philippines.

Oliva bulbiformis Duclos 1835 Monog.Genus *Oliva*,pl.27,fig.10 Reeve,Conch.Icon.,Oliva,pl.13,species 26 describes this species as follows," Shell abreviately ovate,swollen,rather thick,spire short, small,columellar plaits more or less callous;greyish yellow,variously spotted and reticulated with olive,generally two banded,columella sometimes very faintlytinged with red,interior of the aperture bluish white,sometimes livid violet." .." Varieties O. *dactyliola* and *caroliniana* Duclos. Hab. Mollucas. ..This species may be readily distinguished by its swollen bulbous form,varying more or less in convexity." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.77,pl.21,figs.94-96,describes the species as follows," Shell short and very bulbous,colored as in O. *elegans* externally,but the interior of the aperture chocolate brown, or violaceous brown. Length,30 mill. Solomon Ids.;Mollucas.. This form is typically very distinct from all species related in external coloring,yet I fear that it will be found to graduate into the preceding species (O. *leocoquina* Duclos)," End Tryon quote.
Charles Johnson,Nautilus 24,p.66,1910 states," This species is distinguished from the preceding (O. *dactyliola* Duclos) in having a much smaller spire usually entitely covered by a callus. *Oliva similis* Marrat is evidently a variety without the callus spire. This species seems to naturally lead to the small callus-spired species, such as *mucronata* Marrat,*lepida* Duclos,*todosina* Duclos,*carneola* Gmel., *tessellata* Lam. etc. " End Johnson quote.

Distribution : Zamboanga,Philippines , ex. Marshall Sohl,1948. This set is interesting because it contains specimens that clearly fit all figures and descriptions of this species, but also contains specimens that may well be placed in O. *dactyliola* Duclos,being smaller (possibly more juvenile) and not as swollen as the typical. We may have both species in the Burch collection, or we may, as seems more likely, have one variable species.

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Oliva dactyliola Duclos 1835 Monog.Genus. *Oliva*,pl.27,figs.5-8 Ph.Dautzenberg,Journ.Conchyl.,vol.71,1927 discusses this species as follows," We have eliminated from the synonymy fig.9 of Duclos,which presents no well defined character,because Ducros de St.Germain,who has studied the shell represented under this figure,states that it is O. *bulbiformis* and certainly not *dactyliola*. However, Reeve has supposed that O. *dactyliola* could be a synonym of *bulbiformis* and Tryon makes it a variety of O. *funebralis* Lamarck,to which he compares moreover,O. *picta* Reeve and,with doubt, O. *blanda* Marrat. Finally,Johnson,though maintaining O. *dactyliola* to be a distinct species,says that it appears to be intermediate between *funebralis* and *bulbiformis* having the spire of the first and the form of the second. Whatever concerns these diverse opinions we can say that our example from the Isle of Pines agrees well with figures 5 to 8 of O. *dactyliola* of Duclos. Distribution: Isle of Pines, New Caledonia (ex.Coll.Bougier); New Guinea (Duclos,Ducros,Weinkauf); Amboina (Ducros);Moluccas (Marrat,Weinkauf,Bartsch);Lomboc (Grasset) ;Philippines (Grasset,Hidalgo); Iolo et Mariannas(Hidalgo); Banka,Timor,Obi (Horst et Schepman)." End Dautzenberg quote.
G.B. Sowerby,Pro.Mal.Soc.Lon.,vol.4,p.3,1900 comments on the species as follows," Two specimens from Pondoland. I have specimens of this species from the Island of Cebu,Philippines. I cannot agree with Tryon that it is identical with O. *funebralis* Lamarck." End Sowerby quote.
As mentioned above- Charles W. Johnson,Nautilus,vol.24,p.66
Tryon,Man.Conch.,vol.v,p.77,figs.3-5.

Oliva tricolor Lamarck 1810 Anim.sans Vert.
Anim.sans vert.(Deshayes edit.) vol.x,p.615
Reeve,Conch.Icon.,pl.12,species 22,a,b. Reeve describes the species as follows," Shell cylindrically oblong,sometimes rather narrow, spire rather short,peculiarly callous, columellar plaits rather strong towards the base; whitish or greenish,profusely clouded with blue and saffron-red,marbled and banded with green,spire obliquely tessellated with black,base of the columella tinged with a blush of blood-red,interior of the aperture white. Var.O.philantha Duclos. Hab.Mauritius. ...The coloring of this species consists of a profuse mottling of clouded blue and saffron-yellow spots,with,in most specimens ,a large proportion of green,showing two bands,one round the middle of the shell,and one beneath the sutures; but the most characteristic feature of the species consists in the spire being obliquely tessellated with black,and a slight mixture of saffron red." End Reeve quote

Tryon,Man.Conch.,vol.V,p.76,pl.21,figs.86-88. Tryon considered the species a variety of O.elegans Lamarck , an assignment that has been refused by most authors. Tryon described the species as follows, " The zigzag painting is more or less broken up into spots, and is blue,olive or chocolate shaded with orange,disposed upon a light ground. This has usually been considered a distinct species,but is connected with the type by insensible gradations. O.tringa Duclos (fig.88) is probably the young state." End Tryon quote.

Charles W.Johnson,Nautilus,vol.24,p.67,1910. Johnson discusses the species as follows," This species has the outline of variegata and not of elegans; it has the salmon colored fasciole,but the color of the shell is very different from either. The dark specimens are bluish green,with bands of a slightly darker shade--not brown;the entire shell is spotted with yellow,spire and lip coarsely marked with brown. Light colored specimens often have bright yellow and blue spots; with the bands obsolete or wanting,such specimens often resemble ' O. episcopalis Lamarck' (O.caerulea by Johnson) so closely as to be only separated by the violet-colored aperture of the latter." End Johnson quote.
Charles W. Johnson,Nautilus vol.28,p.102,1915. Johnson here considers " var.philantha Duclos, Chenu,Ill.Conch.,ii,pl.22,f.5 The var. philantha is the light colored form approaching (Oliva episcopalis) in external appearance." End quote,

Distribution based upon some of the sets in the Burch collection: Mauritius (several sets of the typical dark green banded typical); Mauritius (another set Ex. G.A.S. Barnacle, lacking the bands,large light colored shells); Zamboanga,Philippines (large series ex. Marshall Sohl,1948,composed of light colored specimens but showing the broad green bands faintly); Java, ex.W.F. Webb, typical; Davao City,Philippines,ex.R. Fontecha (shells of entire set shorter, stouter with markings of some indicating related species); Zamboanga Bay,Philippines ex. J. Tapales leg.1937 (an interesting set for the locality being of very fine dark green banded typical shells, whereas other lots from Zamboanga seem to be largely of the light colored form.)

Oliva mustellina Lamarck 1810 Ann.du Mus.,xvi,p.316
Reeve,Conch.Icon.,pl.13,species 23. Reeve describes the species as follows," Shell cylindrically oblong,spire flatly depressed,sharp at the apex,last whorl somewhat produced posteriorly,columellar plaits numerous;yellowish,promiscoully painted with numerous flexuous narrow streaks,columella whitish,interior of the aperture violet. Lamarck,Anim.sans Vert (Deshayes Ed.)vol.x,p.616. Hab.Singapore (in fine sand at a depth of about seven fathoms); Cuming. ..There is little variation in this species,which is well characterized by its straight cylindrical form,depressed spire,flexous line painting and violet interior." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.78,pl.22,figs.6-14. Tryon discusses the species as follows," Cylindrical,the aperture long and narrow,the spire very short,sharp-pointed; pale yellowish,covered with ~~a~~ light chestnut fulgurations,interior deep violet. Length 1-1.25 inches. Singapore;Japan. ... Distinguished at once by its cylindrical form, light coloring, and violet interior. The following may be considered synonymous,being nostly slight cariations in form,or dead and faded specimens: O. *caroliniana* Duclos(fig.7),O. *angustata* Marrat (fig.8), O.*laevis* Marrat (fig.9),probably O.*scitula* Marrat (fig.10),O. *grata* Marrat (fig.11), O.*pacifica* Marrat (fig.12), O. *arctata* Marrat (fig.13),, and O.*cana* Marrat (fig.14). Possibly O.*neostina* Marrat, not Duclos, and O. *javana* Ducros, also belong here. " End Tryon quote.
Charles W. Johnson,Nautilus 24,p.66,1910 comments as follows" The deep suture and cylindrical form,often noticably narrower toward the anterior,suggest an approach to *scripta*. Specimens with interrupted revolving bands constitute the variety *angustata* Marrat. O. *athenia* Duclos resembles this species in miniature." End Johnson quote.
Hirase,Shintaro--An Ill.Handbook of shells in natural colors from the Japanese Islands.. pl.113,fig.4 (good figure) .
Kira,Tetsuaki,Coloured Ill. of Shells of Japan,1955,pl.31,fig.5 (an excellent figure).

Distribution from sets in the Burch collection: Inland Sea,Japan (Frederick Stearns); Loc Kii,Japan (Kanamaru,1939); Sulu Archipeligo (G.P. Robinson); Singapore (somewhat lighter than those from Japan,but otherwise typical.).

Oliva rufula Duclos 1835 Monog.Genus Oliva,pl.19,figs.9,10
Reeve,Conch.Icon.,Oliva,pl.20,species 50. Reeve describes the species as follows," The Reddish Olive. Shell oblong,soire short,depressed, last whorl callously produced at the posterior end of the aperture, columellar plaits rather faint;brownish-fawn,obliquely banded with reddish chestnut,and obscurely diagonally crossed with lines of the same color,columella and interior of the aperture somewhat fawn tinted. Hab. Cagayan,Island of Mindanao,Philippines (in sandy mud at a depth of twenty fathoms;Cuming....The form of this species is similar to that of O. maura (Oliva oliva L.) ; but the cross barred style of coloring is characteristic and appears constant." End Reeve quote.

Tryon,Man.Conch.,vol.V,p.75;pl.20,fig.79. Tryon describes as follows, " Fawn colored, crossed diagonally or transversely by dark chestnut bands formed by the coalescence of trigonal markings;aperture white within.Length 1 inch.Philippines,Moluccas." End Tryon quote.

Distribution in the Burch collection: Cebu,Philippines;Zamboanga, and stated to be from the Sulu Archipeligo.

Inasmuch as this species seems to maintain both form and pattern consistently showing no noticable variation,is distinctive and easily recognized, we think it is advisable to admit the species as distinct.

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Oliva funebralis Lamarck 1810 Ann.du Mus.,xvi,p.332
Tryon,Man.Conch.,vol.V,p.77,pl.21,figs.97-99;pl.22,figs.100-5. Tryon discusses this species as follows," Shell rather more cylindrical than the preceding species (O. bulbiformis Duclos), with the usual color markings of the group.It differs insufficiently from O.leucoquiana in the lower band of the fasciole being deeply strigated with chocolate;aperture white or slightly bluish or chocolate within. Length 1-1.8 inches..Ceylon;Moluccas;New Guinea;Viti Islands;... O.leucostoma Duclos (figs.98,99), O. inornata Marrat (fig.100),O. propinqua Marrat(fig.1), and O. lutea Marrat(fig.2),probably, are synonyms." End Tryon quote.

Charles W. Johnson,Nautilus,vol.24,1910,p.67,states," This species seems to occupy an intermediate position between tigrina and elegans. It is beautifully illustrated by Marrat (Thes.Conch.,pl.11,figs.143--148) under the names leucostoma Duclos and labradorensis (Bolten) The figure cited by Bolten in Lister,(tab.731,fig.20) is unrecognizable so that labradorensis can fortunately be dropped.The narrower form suggests a probable relationship to the narrow,cylindrical mustellina Lamarck, while the broader form shows a tendency toward the more inflated dactyliola Duclos. Charles W. Johnson in Nautilus, vol.28,1915,pp.100-101 discusses the species again as follows, " An extremely variable species, the limits of which are difficult to define.The figure cited by Bolten is unrecognizable.O.avelana as figured by Marrat probably represents faded examples,of which I have seen similar colored specimens. Under glandiformis Marrat figures at least two species;figure 173 is a form of elegans,the others probably variations of this species. The figure referred to by Lamarck as glandiformis cannot be identified." End Johnson quote.

Reeve,Conch.Icon.,pl.VII,species 10 .Reeve has figured in his fig. 10a a specimen of this species which he has considered a form of O. maura (= Oliva oliva L.).

Distribution from the Burch collection: Zamboanga,Philippines; Surigao,Mindanao,Philippines; Buin,New Guinea. It seems as if many of our correspondents have used the name O.leucostoma Duclos placed in syn.here. This remains a puzzling species.

Oliva ponderosa Duclos 1845 Mon.Genus Oliva,pl.15,figs.8,9
Reeve,Conch.Icon.,Oliva,pl.II,species 4,a,b. Reeve describes the species as follows," The Ponderous Olive. Shell oblong-cylindrical, thick,stiut,spire but little exserted,last whorl more or less produced toward the apex,columellar plaits rather numerous,but partially faded; cream white,sparingly painted with obscure bluish or violet short interrupted streaks,here and there brown and reticulated, columella and interior of the aperture carnelion-white,aperture sometimes tinged with flesh pink. Hab.Mauritius.... This fine species is distinguished from the preceding and allied forms, by its solid structure and by the produced growth of the last whorl at its hind extremity,where it rises into a callosity above the suture after the manner of O. maura. The painting consists of scattered interrupted brown streaks,reticulated in places,obscured into a bluish violet or milky aspect, by an overcharge of the same colorless enamel on the ground." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.80 figures the species on his pl.34,fig.53 but considers it a synonym of O. erythrostoma .
Charles W. Johnson,Nautilus,vol.24,p.51,1910 comments as follows, " On the other hand the shells become gradually lighter in color and abnormally thickened, representing the var. ponderosa Duclos. The latter seems to be characteristic of the forms from Mauritius and adjacent islands." End Johnson quote. Johnson thought this form a variety of O. erythrostoma.
Distribution and comment on sets in the Burch collection: Mauritius , typical form but with both white and salmon apertures; Kings Coast, East Africa,ex A.J. Wiley,1958, shells seem to be identical with those from Mauritius; Northwest Australia, typical in form, but with both white and light salmon apertures; Maldive Islands, Indian Ocean. A very long series of specimens from this locality present a puzzling close relationship of this species with others. The high callosity above the suture becomes less pronounced in the more juvenile specimens; some have white apertures, others reddish salmon, and several range into complete albino. Nevertheless, the produced growth of the last whorl in all adults of this form and the consistently more obese shape leads us to the inclination that we should admit the species. Other species are considered distinct on grounds much less apparent.

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Oliva flammulata Lamarck 1810 Anim.sand Vert
Anim. sand Vert (Deshayed Ed.) vol.x,p.613
Nicles, Maurice-Moll.test.de la Cote Occ.,d'Afrique,1950,Species 193. We are accepting Nicles figure and description of this species and consider it a species of the fauna of West Africa.
Tryon,Man.Conch.,vol.V,p.84,pl.32,figs.11;pl.34,fig.55. Tryon describes the species as follows," Yellowish white,with reticulations and angular markings of chestnut brown, and occasional maculations ; interior of aperture whitish or tinged with purple.Length .0-1.5 inches...West Africa,Senegal,Cape Blanco." End Tryon quote.
Reeve,Conch.Icon.,pl.19,species 41.Reeve thought the species close to O. reticularis Lamarck and from the West Indies. We place this as an error.
Distribution: Several sets in the Burch collection from West Africa; set from Cape Blanco,West Africa labelled Oliva marmorea (Martini) Marrat, shells fitting all descriptions and figures of Oliva flammulata Lamarck. We have O.marmorea Marrat in the synonymy.

[illegible]

[illegible]

[illegible]

Oliva australis Duclos 1835 Monog.Genus Oliva,t.8,figs.3,4 Reeve,Conch.Icon,pl.19,species 42,a,b. Reeve describes as follows, " The Southern Olive. Shell oblong-cylindrical,spire exserted,columella slightly compressed in the middle,plaits numerous,soon fading with age;whitish,ornamented with waved purple-ash lines,which are often promiscous,sutural edge of the whorls dotted,columella and interior of the aperture white--Hab.? ...The waved marking of this species appears to be invariably of an ash-purple color. It is of an oblong -cylindrical form,and very distinctly characterized." End Reeve quote.

Tryon,Man.Conch.,vol.V,p.85,pl.32,figs.19-20. Tryon defines this species as follows," Spire elevated; white or yellowish,with light chestnut or purple-ash zigzag lines; interior of aperture white, maculated with purple near the margin. Length .75 -1 inch. Australia, New Guinea. ...Mr. John Brazier informs me that the natives of New Guinea place these shells on red-hot ashes,which discharges the coloring,leaving them entirely white;in which condition they are strung to make neck ornaments and girdles. O. caldania Duclos (fig. 20) is a synonym." End Tryon quote.

B.C. Cotton,1955,Olividae,fig.5,comments," Whitish,purple to brown faint zig-zag lines,aperture white. One Inch." End quote.

Distribution from sets in the Burch collection: Outer Harbor,South Australia;Long Reef,Sydney,Australia, N.S.W.; Dunn Bay, S.W.Australia; Rockingham,Western Australia;Keppel Bay,Queensland,Australia, this set being somewhat lower spired than the first listed, and may be the form mentioned as O. caldania Duclos.

It is possible that Oliva caldania Duclos 1835,Monog.Oliva,t.6,figs. 3,4, may be a recognizable species. Large sets in the Burch collection from Broome,Western Australia, seem to constitute at least a separable race. The specimens are consistently lower spired,but the markings seem to be the same. We are hesitant about simply placing it in the synonymy of O. australis because both B.C.Cotton and Joyce Allan list them as separable.

Oliva scripta Lamarck 1810 Ann. du Mus.,xvi,p.315
Reeve,Conch.Icon.,pl.14,species 27, " The Inscribed Olive.Shell cylindrically oblong,rather broad posteriorly,spire acuminate but depressed,columellar plaits small,numerous;yellowish,faintly reticulated throughout with pale brown,sparingly marked with brown waved characters in two bands,columella and interior of the aperture bluish white. Hab.-? ... Lamarck,Anim. sand vert.(Deshayes Ed.) vol.x,p. 615...Very closely resembling O. literata in its style of painting , but uniformly of smaller size,and less elongately acuminated.The shell is broader beneath the sutures, the spire being a little depressed, and has more the form of O.mustelina." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.82,pl.30,fig.85," Cylindrically ovate,spire rather short,columellar plaits numerous;yellowish brown with pale chestnut zigzag markings and reticulations, and two bands of interrupted dark chestnut hieroglyphic figures;bluish white within the aperture. Length 1.5-2 inches. China,Australia." End Tryon quote. However, in the discussion of O. litterata Lamarck (= O. sayana Rav.) Tryon comments (p.84)," The attenuation of the posterior part of the shell,distinguishes this from O.reticularis, with which some of its varieties are nevertheless too closely allied;the same character and greater size distinguish it from O. scripta Lamarck,which has very similar painting." End quote.
Charles W. Johnson,Nautilus,vol.24,p.66, " The suture is deep and wide. The color markings resemble O. litterata." End quote.
Kuroda and Habe,Check List and Bib.,1952, list O.scripta from Japan.

All authors comment about the similarities of this species with some forms from the West Indies.
Ph.Dautzenberg,Journ.Conchyl.,vol.71,1927,states," It is impossible for us to discover any difference whatever permitting us to separate Oliva scripta from specimens of the West Indies called O.jamaicensis by Marrat and O. caribbaensis by Dall and Simpson. The subcylindrical form a little bulging at the top of the last whorl,the short spire, the pattern and color are identical..,The pattern of O. litterata Lamarck, from the West Indies,resembles very much that of O.scripta but its form is more elongate,its spire higher, and its last whorl is not swelled above." End Dautzenberg quote.
Distribution of O. scripta by Dautzenberg: New Caledonia (Bougier); New Holland (D.Dypur,ex.RiquetO;Santiago de Cuba (de Boury);Mayaguez Harbor,Porto Rico (Sowerby); Bahia (Serre).
Distribution and comment on sets in the Burch collection. Sets of specimens from the following localities seem to be almost identical and to fit all figures and descriptions of typical O. scripta: Moluccas ;China, ex.Hugh Fulton; Mt. Lavinia,Ceylon ex. G.A.S. Barnacle; Ceylon, ex. Hugh Fulton. A set of specimens from Bhuket, Thailand, Rev.Creder leg. 1956, seem to be consistently darker in color, the markings much more distinct, and perhaps slightly more obese, but otherwise all characters match.
Large series from the West Indies and the Caribbaean offer an interesting study. One lot from the east coast of the Canal Zone which we have simply assigned to O. reticularis var. ? contains specimens close to O. scripta in form and markings. Another set from Mayaguez, Porto Rico, ex. A.F. Phares, is no doubt the same form. Some of the specimens in long series from Puerto Plata,Dominican Republic,seem to fall into this group, although most of them are somewhat higher spired. In conclusion on this problem, it is our opinion that O. scripta is easily separable from the above forms by the produced posterior of the body whorl giving the shell, as Johnson comments, more the shape of O. mustellina.

Dr. Myra Keen,Stanford University (Personal communication)," My trip abroad was a fruitful one,for not only did I attend the Colloquium and the Nomenclature Section meeting of the International Zoological Congress in London, but I also made some useful discoveries at the British Museum of Natural History. Study of Carpenter's Mazatlan types, which are carefully segregated and in reasonably good condition,necessitated several changes in my book, and Stanford Press is making these, even though I had turned in page proofs before I left. I found that D'Orbigny's entire collection is at the British Museum and got to hold some classic type specimens in my hands,Mostly I concentrated on the family Vermetidae and now feel that I can publigh a revision that will be usable. I am especially pleased to get our West American species straightened out. It was like finding several key pieces to a jigsaw puzzle to examine the type specimens of all Morch's and Carpenter's unfigured species; rather,I should say,of nearly all-- but the missing ones can now be safely construed. I have been busy relabelling our collection while my memory of the types is still sharp and clear,and I find that Stanford has practically all the recognizable forms. ....you will be interested to kmow I saw Dr. T. Soot-Ryen in London. I mentioned to him that I had heard he and Helen Rost are married. He said not only that but that they have a boy nearly a year old. I also met a number of well known malacologists. There were so many of us there that Ruth Turner organized a malacologist's dinner,which about 20 attended. I especially enjoyed the chance to get acquainted with Mrs. Van der Feeh,the editor of Basteria,whose name may be more familiar to you as W.S.S. van Benthem Jutting. Bernhard and Ilse Rensch,Gilbert Voss,C.O. van Regteren Altena,A.C.van Bruggen, Carriker from North Carolina were also there ,besides several whose names I did not get. ...
Dr. Schenck's operation was a success, but complications have set in, so he is now very ill. "

Dr. Wm. Clench, Harvard University- excerpt from a personal note- " Ruth is still in England, but plans to leave the 30th if " Daisy" (the hurricane) doen's complicate things. Julia and I leave the 31st for Ann Arbor and the A.M.U. meetings, Ruth in England, Bob in the Bahamas,Joe Rosewater and I in Kentucky (Sept,), and Arthur Clarke on the " Vema" in the Pacific. We are doing all right for a department."

We certainly agree with the last line in particular. The volume of scholarly work turned out by Dr. Clench and his staff is nothing short of amazing. Perhaps I am thinking of numerous other groups who succeed in producing nothing,or from whom we hear on rare occasions.

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E.V. Edmonds passed away Sept.8th. EVE as we knew him was a member of our dredging crew during the years we were working with our boat off Redondo Beach. He was always an enthusiastic collector, and an artist of genuine talent. Of course, in everyday life he was Dr.E.V. Edmonds, veterinarian and inspector for the State of California for many years. We have lost another very old and very close friend.

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Range Extension

Muricopsis zeteki Hertlein and Strong -Type locality,Panama.
Dr. Don Shasky has collected the species from Puertocito, South of San Felipe, Baha California.

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Publications Received

Bulletin of the Southern California Academy of Sciences- Vol.57, May-August,1958,Part 2. Among other papers this issue contains three of interest on mollusks.

1. Studies on the Opisthobranchiata II. A new Tectibranch of the genus *Philine* by N.T. Mattox.
   Philene alba n.sp. Type locality,1.8 miles south-east of Long Point,Santa Catalina Island, in 35 fathoms.
   The paper is well prepared,pp.98-104, 2 plates. The anatomical characters are carefully figured and described, as well as clear statements on the taxonomy.
   Any addition to the molluscan fauna of California is of unusual importance to us.
2. Notes on the Effect of Preservation on the Sea Hare Color Pattern and the Synonymy pf *Aplysia* (= *Tethys*) *ritteri* Cockerell by Lindsay R. Winkler. The findings of the author indicate that Cockerell's species should be placed in the synonymy of *Aplysia californica* Cooper,
3. The range of the California sea hare,*Aplysia californica* Cooper by Lindsay R. Winkler. The range is extended southward to Abreojos Point, on the coast side of Baja California,Agua Verde Bay on the inner peninsular side, and Guaymas on the Sonoran coast. Representative specimens are also in the collection (Hancock Foundation) throughout the upper Gulf of California. The northern limit remains Elkhorn Slough,Monterey Bay.
   ** Note- We had stated the range in Minutes #48 from Elkhorn Slough to Todos Santos Bay.

Proceedings of the Malacological Society of London, Vol.33,part2 , August,1958. The following papers are contained in this issue.
Observations on the radula of Adalaria proxima(A. & H.) by T.E. Thompsom.
Notes on the mantle cavities of some trochid and turbinid gastropoda by W.C. Clark.
Two useful techniques in freshwater Malacology by J.A. van Heden
On the swimming behavior of escallops. by R.H. Baird
Three mezozoic gastropod generic homonyms renamed. by L.E. Cox
Variation and specific limits in the *Arion ater* aggregate. by A.J. Cain and M.H. Williamson,
Pecten shanganiensis nom.nov. Lower Miocene,East Africa by F.E. Eames.
Glycymeris wrigleyi, a new name for *Pectunculus decussatus* J. Sowerby by Dennis Curry.

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The Philippine Shell News-Vol.1,No.1,March,1958.
159 Kanlaon St.,Quezon City,Philippines.
A very interesting and well prepared bulletin of 10 pages. We wish them the very best of success, and if issue No.1 is followed by others of equal qualitythat is assured.

Australian Newsletter-Malacological Society of Australia-Melbourne, Australia, No.20,27th Jan.,1958
This is always an interesting and newsy paper.

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Die Typen und Typoide des Uberseemuseums Bremen,# 5: Mollusca(Gastrop. Prosobranch): Neritidae und Thiaridae Von Helmut Knipper -Ver. Uberseemus Bremen,March,1958- pp 39-74,pl.s5-9.

Schnecken im Nadelholzwald, Von Ewald Fromming-Biologischen Zentralblatt,Band.77,1958 pp 53-63

The Americam Malacological Union- Twenty-fourth Annual Meeting University of Michigan, Ann Arbor,Michigan, Sept.2-5,1958.

The following will be excerps from a personal letter of the secretary, Margaret C. Teskey, " Just getting around to tell folks what happened at the Ann Arbor meeting. It was a fine meeting, not quite as large as some (65 registered), but unusually good papers with plenty of time to discuss each one. The idea of having housing, meals and meeting room under one roof was an inspiration. The weather was good, but nobody cared.

The west coast was represented by Jean and Crawford Cate,Harriet Thomson, and Bernice Leland, while the Tom Pulleys and Paul L. McGee and his wife were on hand in behalf of Texas. " We admit to being second largest now" said McGee, " but you just wait until that ol' ice cap melts up there".

The A.M.U. got a most pressing invitation (all fancied up in Texas style), to meet at Corpus Christi in 1959. However, a prior bid to meet in Philadelphia had been received and was accepted. That's as it should be since Tucker Abbott was elected to be president in 1958-1959. ...

Elected to Honorary Life Membership, Horace B. Baker,Joseph C. Bequaert. "

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Those of us who were unable to attend the A.M.U. meeting will note further regret for having missed hearing the papers. Some of them will be mentioned below.

Adlai B. Wheel Sr.- " Small Beginnings"

Ralph W. Dexter- " Distribution and Color Patterns of *Cepaea hortensis* at Cape Ann,Mass."

William K. Emerson-" Results of the Puritan-American Museum Expedition to Western Mexico."

Arthur H. Clarke Jr.,- " Preliminary Report on Abyssal Atlantic Mollusks from the Theta and Vema Expeditions."

Crawford N. Cate- " *Cypraea mus* needs attention."

Martin B. Reynolds- " Pleistocene Molluscan Faunas of the Humboldt Site,Ross County,Ohio."

James A. Zimmerman-" Pleistocene Molluscan Faunas of the Newell Lake Deposit,Logan County,Ohio."

A. LaRocque- " Methods for Studying Pleistocene Non-Marine Mollusca."

John B. Burch-" Chromosomes of Basommatophoric Pulmonates."

Morris K. Jacobson- " A Monograph That Needs to Be Published"

C.O. Berg,B.A.Foote, and S.E. Neff- " Evolution of Predator-prey Relationships in Snail Killing Sciomyzid Larvae(Diptera)."

Harold J. Walter- " The Morphology of *Lymnaea emarginata* Say with remarks on problems relating to the systematics of Lymnaeids."

Paul F. Basch- " Gyndlachia in Michigan."

Henry van der Schalie and Dee S. Dundee- " The Egg-laying habits of *Pomatiopsis lapidaria* and *P. cincinnatiensis* ; problems relating to the culture of Schistosome intermediate hosts."

Joseph P.E. Morrison- " Further Study of the Salt Marsh Snails."

Joseph P.E. Morrison- " Brackish Water Genera of Mactridae."

H.B. Herrington- " A Study of the Sphaeridae."

Paul F. Basch- " Study on Ancylidae"

Leslie Hubricht- " A Puzzle in Connection with the Blind Cave Species of *Carychium*."

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On the lighter side- In Minutes 180,p.5, we announced the death by drowning of Mr. K.J. Grosch of Mozambique. We copied this from the Hawiian Shell News. A very facetous letter from Mr. Grosch tells us that news of his death are greatly exageratted...

PUBLICATIONS

Results of the Puritan-American Museum of Natural History Expedition to Western Mexico 3. The Terrestrial Mollusks by Morris K. Jacobson Am.Mus.Novitates ,No.1899,July 22,1958. 14pp 2 pls.

The paper is clear and well prepared. A new subgenus is described, Puritanina Jacobson 1958- Type Bulimulus montezuma Dall 1893.

AA new species is described, Bulimulus (Puritanina) harribaueri .

Journal of Conchology,Vol.24,No.8,29 Aug.,1958- The following papers are included-

Littoral collecting in the Persian Gulf-H.E.J. Biggs
On a new sub-species of Placostylus-fibratus(Martyn)-from New Celedonia-T. Pain
A note on Helicodonta obvoluta (Muller)-S.P. Dance
Haliotis speciosa, a South African species- R.R. Talmadge
Viviparus eaten by crows- T.E. Crowley
Drought resistance in an African freshwater bivalve-S.P. Dance
A short history of the known occurences of Helicella gigaxi (L.Pfeiffer) in Ireland- A.W. Stelfox
The validity of the name Eulima candida Marrat-N.F. McMillan
Vitrina major (Ferussac) in Surrey: a correction-H.E. Quick
Clausilia bidentata (Strom.) with double aperture-H. Schlesch
Cochlicella acuta (Muller): another colony in Sussex-F.H. Cozens

Venus- Japanese Journal of Malacology, Vol.20, No.1,July,1958
The following papers are included-
Pilsbry and the Mollusca of Japan- Tokubei Kuroda
My visit to the Academy of Natural Sciences of Philadelphia-T.Ino
My condolence of Dr. H.A. Pilsbry- Iwao Taki
On the more species of Assiminea from Japan- Tokubei Kuroda
Descriptions of five new species of Japanese marine gastropods- Tokubei Kuroda. A new genus is described with a new species- Komaitrochus pulcher Kuroda and Iwao Taki - followed by new species of Mathilda . Clearly described in English but not figured.
A new Mitra from Japan- J.H. Webb ---Mitra (Tiara) rehderi - The species is beautifully figured.
Descriptions of Ten new gastropod species- Tadashige Habe
On the radulae of Japanese marine gastropods- Tadashige Habe This is a well written and illustrated paper. We need more of such careful and detailed work.
Anatomical studies on the Japanese land snails (10) -Taxonomy of Japanese Clausillidae (2) -Tadashige Habe
Some notes on the radula of Purpura echinulata Lamarck- Kohman Y. Arakawa. This is a carefully written and well figured paper.
On the new-born young shells of the pond snail-Jun Miyazaki
On the planktonic egg capsules of Littorivaga mandshurica (Schrenck) Yoshio Kojima
On some species of Mollusca collected on the banks of Izu-Schichito- Shokei Shirai
On two new species of fossil Mollusca from the Asagai formation of Joban Coal-Field- Katsumi Hirayama
A history of Japanese Conchology (37) (Concluded) Tazima Kanamaru
On the differentiation of the crenated folds in the midgut-gland of Eulamellibranchia (II)- Masao Nakazima
Review of the nomenclature of Japanese shells (1) Katura Oyama
Review of the known species of the Japanese Turridae-(3) -K.Oyama
A new Pliocene Venericardia from the northern end of Iwate Prefecture,Japan- Kiyotaka Chinzei (con.)

Radula of Rapana thomasiana- Yataroh Tanaka
Land shell fauna- Kuroda

Indo-Pacific Mollusca- Published by The Department of Mollusks-Academy of Natural Sciences of Philadelphia,Philadelphia,Penna. The editor in chief is R. Tucker Abbott,Pilsbry Chair of Malacology-Co-editors are William J. Clench,Harald A. Rehder,. Some of the plates are to be in color, and the sample pages indicate the quality of the work to be expected.

The subscription rate is $5.00 per hundred pages, and it is certain that all interested in mollusks will wish to subscribe.

Intermediate Hosts of Schistosoma -African Bimmphalaria and Bulinus-by G. Mandahl-Barth. World Health Organization, Geneva,1958.

This is a very thorough work consisting of 89 pages of text and 40 full page plates.

A clothbound edition is listed for sale at $4.00. Copies may be purchased from John Q. Burch.

Sobre " Turbonilla (Pyrgiscus) dispar Pilsbry,1897- (Gastropoda, Pyramidellidae) by H. De Souza Lopes. Rev.Brasil Biol.,April,1958.

This is a well written paper. The two plates are line drawings and the numerous figures show the microscopic sculpture in detail.

Sobre Um Novo Gastropodo Brasileiro Do Genero " Solariella" Wood, 1842 (Trochidae) by H. De Souza Lopes and Paulo De Sa Cardoso.
The new species is Solariella carvalhoi sp.n.
The paper is illustrated with two photographic figures and one line drawing.

Report on the Mollusca chiefly collected by the S.S. Sayo-Maru of the Imperial Fisheries Experimental Station on the continental shelf bordering Japan during the years 1922-1930 -Part 3 Lamellibranchiata (1) by Tadashige Habe. Publ.Seto Marine Viological Lab.,June,1958. pp 241-280 and two full page plates.
On the Shell-bearing Opisthobranchiate Molluscan Fauna from off Choshi,Chiba Pref.,Japan, by Tadashige Habe.
Fauna of Shell-bearing Mollusks in Mutsu Bay, Lamellibranchia (1) by Gotaro Yamamoto and Tadashige Habe- Bull. Marine Biol.Sta. of Asamushi,Tohoku Univ.,(March,1958)- 20 pp, 4 pls.
The Fauna of Akkeshi Bay XXV. Gastropoda. by Tadashige Habe. Publ.from The Akkeshi Marine Biol.Sta.,June,1958. 39pp,5 pls.

Some of these papers are of unusual interest to some of us because of the large number of species and related forms that rane to the west coast of North Ameriwa. The possible variation is something to be studied carefully. Dr. Habe has figured them well including a plate of the radulae.

Uber das isolierte Vorkommen von Chondrina clienta auf Oland und Gotland und anderer sudostlicher Landmollusken un der ostbaltischen Fauna- by Hans Schlesch. Archiv. fur Molluskenkunde,Band 87,1958.

Correspondentieblad Van De Nederlandse Malacologische Vereniging Editor- L.J.M. Butot. This is the monthly mimeographed paper of the Netherlands. They are in the Dutch language, but contain much valuable data. For example the No.75,April,1958, contains some valuable material on the chitons. The worker in this group who overlooks such papers may do so with regret.

The Fisheries Newslatter of Australia for August,1958 contains some data of interest on the 1958 Japanese Pearling.

The International Commission of Zoological Nomenclature in Opinions 260 and 261 have declared the work of F.C. Meuschen 1778,Museum Gronovianum to be a rejected and invalid work. The later publication by the same author, Museum Geversianum,1787, was not mentioned. However, it is indicated that this should also be abandoned. Inasmuch as we adopted some of the Meuschen names, we propose to replace them.

The following personal communication from Dr. Myra Keen seems to be a clear explanation of the matter.

" I thought about writing you a note re Meuschen's " Museum Geversianum" when I noticed the use of *Oliva erythrostoma* in your well worked out review of the Olividae a couple of weeks ago,but as you have guessed, I am busy, and anyway I didn't have anything really definite to write. When I was at the National Museum in 1940 I saw their copy of Meuschen's book and copied off the page relating to Cardiidae. Rehder at the time was inclined to think the book might be regarded as a valid source of names and was considering a paper in which he would put them on record. However, he never got around to doing that. There apparently are only two or three copies of the book in the U.S.A. The Harvard people have used some of the names when it came convenient,and for the rest, the work has been ignored. My own feeling is that it would best be relegated to the limbo, as it is one of those borderline things. The generic names are all proposed in the plural- Cardia for C*ardium*, etc. The specific names are written in much the same style as in the books that have been rejected. If this work of Meuschen's had been officially recognized years ago, as Roding's Museum Boltenianum was, I would feel obligated to accept it,but as long as it was not,I suspect that trying to salvage it now would bring all sorts of headaches. The few name that we might be able to use to advantage, like the O*liva*, would be far out-weighed by names that would antedate well known species of Gmelin and Lamarck. Sherborn evidently felt this, too, for I believe he disregarded Meuschen's work entirely (I may be wrong on this score, as I am trusting to memory and haven't checked it). Just to cite one possibility that came to my attention only this week: Meuschen used the name V*ermiculi* for the group,apparently, that Lamarck named V*ermicularia*. If Meuschen is accepted and his plural generic names emended to singulars (as some Commission members would be entirely willing to do-I found that out last summer), then Ve*rmicularia* would become *Vermiculus.* That is, unless one can date the name from either of two other non-binomial authors of the 1780's. My feeling is that it is better to get rid of these doubtful works than bother with the problems they would involve us in."

End quote.

****

It is well known that the International Commission of Zoological Nomenclature in Opinion 96, placed the Museum Boltenianum 1798 upon the list of works approved and available. However, there has been a difference of opinion regarding the proper assignment to author, some writers using Bolten, others Roding. The International Commission has settled this matter in Direction 48 in which it is stated that the authorship of this anonymously published work is to be attributed to P.F.Roding.

CORRECTIONS AND ADDITIONS

Minutes 181,p.12. We are replacing the name O*liva* e*rythrostoma*(Meuschen) with, O*liva* m*iniacea* (Roding) 1798 -Museum Boltenianum,p.33.

(con.)

CORRECTIONS AND ADDITIONS

Minutes 182, p.9. We are replacing the name *Oliva emicator* (Meuschen) with *Oliva annulata* (Gmelin) 1790 (*Voluta annulata* Gmelin, Syst. Nat. p.3441, 1790).

It is unfortunate that this name which was given to the abnormal ringed form must be accepted as the typical. Therefore, we propose to accept " var. *annulata* (Gmelin)", p.9 - as the typical form of this species.

The form described as typical under *Oliva emicator*, now vacated, may take the name var. *amethystina* (Roding) 1798, Museum Boltenianum, p.35. The full name then being *Oliva annulata* (Gmelin) var *amethystina* (Roding).

****

Conchological Club of Southern California- Sept., 16, 1958

The meeting was called to order at 7:30 P.M. by the President, Dr. Homer King. There were about thirty members and guests present. In the absence of the Secretary, the minutes were read by Mrs. Rose Burch. The Treasurer's report was dispensed with, since the Treasurer was also absent.

The main paper of the evening was presented by Mr. and Mrs. John Q. Burch, on the topic Olividae. This paper was a condensation of a larger work to be published in the " Minutes" which will run for the next four or five consecutive months. The paper was well illustrated with specimens. For details see the current issues of the Minutes.

Mr. John Fitch was the second speaker of the evening; he displayed a remarkable growth series of *Pecten diegensis* Dall which had been taken in one haul in from 20 to 200 fathoms in Santa Monica Bay. Most of the specimens had *Capulus* on them. Also shown was a display of Dr. Norman Mattox's new species, *Philebe alba*; both the animals in alcohol and the interior shells. Mr. Fitch followed his discussion of these shells with some handsome color slides of uncommon shells brought up from deep water in Santa Monica Bay. Dr. King followed these color slides with some he had taken with a flash camera at the AMUPD meeting in Berkeley last June; all of them very candid shots.

The evening's door prize, a series of olive shells donated by the Burches, was won by Mr. Brooks.

New Publications reported were as follows: by John Fitch, Barnard's Contributions to the Known South African Marine Mollusca; Yamamoto & Habe, Japanese Shells; A.W.B. Powell, Mollusca of the Kermadec Islands; Harry Wells, Feeding habits of *Murex fukvescens*; Mendel and Nichy, Feeding Habits of Some Florida Mollusks; Wells, Predation of Pelecypods and Gastropods by *Fasciolaria hunteria*; and by the Philadelphia Academy of Sciences, Indo-Pacific Mollusca to be published soon. Mr. Burch reported on the new issue of the Bulletin of the Southern California Academy of Sciences, which contains the publication of Dr. Mattox's new species mentioned above. He also mentioned an article on *Tethys* which had come to his attention. Dr. Shasky showed a new map of Mexico which has just been published in that country. Mrs. Burch reported on the 1958 Catalog of the Buttonwood Farms Shell Auction.

An interesting exhibit of *Lambis* was displayed in the lighted case by Mrs. Burch, showing species of this genus in all stages of growth. Mr. Cate reported on the recent meeting of the AMU at Ann Arbor, Mich., and showed a picture of the group which had attended. He also described a little of the action that took place at the Buttonwood Farm Shell Auction in Philadelphia.

The meeting was adjourned at 9:05 P.M. Respectfully submitted,

Jean Cate
Secretary Pro Tem.

"LEBANON"
LORTON, VA.

MINUTES 183

DEC. 1958

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

News of shells and shell affairs whould be mailed to the editor-

John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Phone Ax. 3-5710
Home Ax 2-7965

The December meeting will be held the evening of Dec.2,Tuesday, at the Los Angeles County Museum. The time will be the usual 7:30 P.M., but this will be our annual Christmas social meeting. The custom is for each member to take a good shell or shells from his or her collection wrapped for a gift. These will be distributed to the members present as decided by the chairman in charge, in this case, Mr. John Fitch.

Refreshments will be served by the club.

*** This is an important note. Instead of entering by the front door as is our custom, for this meeting we must park in the rear of the museum building in the parking lot, and enter by the rear door. This is because this meeting will be held in the dining room instead of our customary room.

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Genus Olivancillaria d'Orbigny 1839
Voy.Am,Merid.,420,1839 Type species, Oliva brasiliensis (Chem.)
= O. brasiliana Lamarck.

Ph.Dautzenberg, Olivides de la Nouvelle Caledonie et de Ses Dependances,Journ.Conchyl.,vol.71,1927, states," In 1858, Gray, in his " An attempt to distribute the species of Oliva into natural groups", placed O.gibbosa Born in a genus Anazola with six other dissimilar species. Further, he created for O. brasiliana Lamarck, O. auricularia Lamarck, and O.claneophila Duclos, another genus,Claneophila, but he replaced the specific name claneophila Duclos with gibbosa in order to avoid the repetition of the same word for the genus and the species. Unfortunately,the alleged natural genera of Gray are badly composed, and modern authors have reunited with reason Claneophila and O. gibbosa under the older generic name Olivancillaria. Thus Claneophila gibbosa Gray (not O. gibbosa Born) must retake the specific name claneophila Duclos. The name Utriculina Gray 1847 falls under the synonymy of Olivancillaria likewise." End Dautzenberg quote.
H. and A. Adams,Genera of Recent Shells,1858,p.141,describe the typical as follows," Olivancillaria d'Orb.,1839, Shell smooth, oblong; spire short,suture not caniculated to the apex; aperture moderate; columella with two or three oblique plaits anteriorly, with a very large callosity posteriorly. Operculum distinct,half-ovate,nucleus subapical. In this genus the suture of the spire is usually filled with a callus deposit, and the spire is very short. In the animal the hind part of the mantle ends in a large, thick,fleshy process,which partly covers the spire."
Subgenus Lintricula H. and A. Adams 1853. Type,O.aquatilis (Reeve) = Olivancillaria auricularia (Lamarck). " Shell oblong,ventricose, thick; spire very short,obtuse,callous,suture not chanelled to the apex; aperture very wide." End Adams quote.
Some authors recognize Lintricula as a valid subgenus. Indeed, a few give it generic value. It seems to our eyes to be Olivancillaria s.s.

Olivancillaria brasiliana (Lamarck) 1810 Ann du Mus.,xvi,p.322
Reeve,Conch.Icon.,1850,Oliva,pl.8,species 13,a,b . Reeve describes the spies as follows,(as O.brasiliensis Chem.) ," Shell somewhat triangularly ovate,rather thick,solid,spire flatly despressed,rather sharp at the apex,columella very callous,the plaits almost buried: fulvous fawn,streaked with white,transversely marked, beneath th lens, with brown interrupted hair lines, and with a broad darker zone at the base. Hab.Brazil. ..A shell of very solid growth,remarkably characterized by its depressed callous spire." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.90,pl.36,fig.38;pl.1,fig.2. Tryon states, " Fulvous brown,fawn,streaked with white,with short transverse hair lines;spire callous,fasciole and interior of aperture orange brown.Length 2-2.5 inches... The body whorl has sometimes obscure brownish fasciculations below the suture." End Tryon quote.
Distribution: Brazil to Patagonia. - A few of the large sets in the Burch collection are: Cassino Beach,Rio Grande,Brazil;Montevideo,Uruguay.
This is the type species of the genus.

Subgenus Agaronia Gray 1839 Type,O. hiatula(Gmelin), designated by Swainson,1840. Fide Fischer 1887.
It seems as if all modern authors with the exception of some specialists on the fauna of the Eastern Pacific, recognize theclose connection between Olivancillaria and Agaronia. The references in part may be;Johannes Thiele,Hand.der Syst.Weich.1931,p.334;Paul Fischer, Man.Conch.,p.598;Charles W.Johnson,Nautilus,1910,1911,1915. It is true that the callus does not cover the spire, and the sutures are distinct in Agaronia. However, the suture between the body whorl and the apex remains distinct in all species of Olivancillaria.being covered by the callus in Ancilla.
H. and A. Adams,Genera of Recent Shells,p.142 define Agaronia as follows," Foot long and pointed behind,shield with the side lobes moderate,acute. Operculum distinct. Shell oliviform,thin;spire acuminate,suture chanelled;aperture wide,effuse anteriorly;columella not thickened posteriorly,tumid, with a few plaits in front. The animal of Agaronia differs from that of Oliva in having an operculum, and from that of Olivella in the form of the side lobes of the foot; the shell,moreover, is light,the spire long and pointed, and the aperture wide and effuse anteriorly." End Adams quote.

Olivancillaria (Agaronia) hiatula (Gmelin) 1792 Syst.Nat.p.3442 Reeve,Conch.Icon.,Oliva,pl.18,species 35. Reeve defines the species as follows," Shell somewhat fusiformly ovate,ventricose,spire somewhat acuminated,columella raised,plaits distinct,peculiarly callously twisted,aperture wide open,emarginated at the upper part;fawn gray,somewhat obscurely marked toward the apex with blue-brown dots and streaks, and encircled around the base with a broad fulvous zone,columella livid purple,interior of aperture livid brown..Hab. Senegal and Mouth of the Gambia,West Africa.... This and the following species (O. testacea) were confounded together by M, Duclos, but they are quite distinct and inhabit very remote localities. The true O. hiatula (pl.3,fig.15, of his monograph) chiefly characterized by the raised constricted gwowth of the columella and by its livid-purple coloring, is from the West coast of Agrica,collected by Adanson at Senegal, and by later travellers at the mouth of the Gambia. O. testacea (pl.4,fig.19,20) of Duclos monograph) converning which Lamarck especially notices the dark brown coloring of the spire and base of the last whorl, was collected by Humboldt and Bonpland on the shores of Mexico, and more recently by Mr. Cuming in the same locality at Real Llejos," End Reeve quote.
As mentioned by Reeve,Duclos confused O. hiatula and O.testacea, and was followed in this by Tryon,Man.Conch.,vol.V,p.88,pl.34,figs. 60-67; pl.35,figs. 68-70. Tryon placed the west American species in the synonymy of the west African type species,O. hiatula (Gmelin). With specimens of both species before us the similarity is apparent, but the variation in both color and form should be sufficient to easily distinguish each in our opinion. The type from west Africa is charavterized by the raised constricted growth of the columella, and by the livid purple coloring. Maurice Nickles,Moll.Test. marins de la Cote Occ.d'Afrique,p.108,species 192 figures and describes Olivancillaria (Agaronia) hiatula (Gmelin) from Du Cap Blanc au Dahomey.
Distribution based on sets in the Burch collection: West Africa from numerous localities; one set ex Hugh Fulton labelled Olivancillaria pallida (Swainson) from West Africa. Tryon placed this in synonymy, and this seems to be logical. It is possible that the constricted columella is not as bright,but in all major characters including coloring are very close. We have followed Tryon.

Olivancillaria (Agaronia) testacea (Lamarck) 1810 Ann.du Mus.,xvi, 324- Anim.sans Vert.,(Desh.Ed.) 10
Reeve,Conch.Icon.,pl.18,species 36. Reeve defines the species as follows," Shell fusiformly ovate,ventricose,spire acuminate,columellar plaits callously twisted,aperture wide open,emarginated at the upper part; ash-gray,more or less obscurely painted with blue-shaded brown flexous lines,smoky brown at the base and toward the apex,columella white,interior of aperture violet-brown..Hab. Real Llejos,Mexico (in sandy mud at a depth of about six fathoms;Cuming. Of a more acuminated form than the preceding species,(O. hiatula), from which it is further distinguished by its smoky or purple-brown coloring, and white columella. " End Reeve quote.
Distribution: Abundant from the Gulf of California southward to Panama.

Olivancillaria acuminata (Lamarck) 1810 Ann.du Mus.,xvi,323 Anim. sans Vert.(Desh.Ed.),vol.x,p.625.
Tryon,Man.Conch.,vol.V,p.88,pl.35,figs.71-80;pl.1,fig.4.Tryon discusses this species as follows," Yellowish fawn,or ash-gray,irregularly marked with zigzags and maculations,or faintly nebulous, the markings being nearly obsolete;suture sometimes with fasciculations,frequently reduced to a row of spots,still more frequently unspotted;fasciole and fasciolar band yellowish or fawn color,sometimes with faint,close,orange red strigations;columella white;interior of aperture white,maculated with chestnut on the lip border. Length 1.5 -3 inches." End quote. Tryon places the following species in synonymy: O. subulata (Lam.).O.modesta (Reeve),O. annotata Marrat),O. cardita (Marrat), and O. barthelmyi (Ducros.)
When it is possible to separate two forms from widely separated localities the natural inclination is to do so. Reeve,Conch.Icon., pl.16,species 33,a,b,c,e and Species 100,fig.33d. Reeve recognized O. acuminata (Lamarck) from Senegal,nonthwest coast of Agrica, and O. subulata (Lamarck) from Sumatra. Reeve states that O. subulata is more ventricose, a thinner shell, marked nest the sutures with short obliquely concentric streaks in place of network.Weinkauf went into great detail to distinguish the two species. However,Tryon, Man.Conch.p.89,states," Fig.71 represents O. subulata (Lamarck) as defined by Weinkauf; it appears more slender, with more elevated spire than some of the figures representing O. acuminata, but every intermediate form may be selected from the specimens before me." End Tryon quote.
From the material before us we are reluctantly compelled to agree with Tryon. It is possible that with more material our views may be changed. It would certainly seem reasonable to accept O.acuminata for the species from west Africa, and O. subulata for the species from the Indo-Pacific, if it is possible to separate them on the basis of any consistent character.
Nicles,Moll.Test.Cote Occ.d'Afrique,1950,p.109,fig.194,recognizes and figures O. acuminata from Rio de Oro,Guinee Francaise; Gabon and French Congo,but also recognizes in his Fig.195, O. annotata (Marrat) from Angola. We are unable to separate them, and at this time are disposed to follow Tryon in placing O. annotata in the synonymy of O. acuminata.
B.C. Cotton,Olividae,no.6,1955, places the species as follows:
Genus Anazola Gray 1858 ,type species ,Oliva acuminata Lamarck 1810
North Queensland,North Africa,Java.
Distribution from sets in the Burch collection: Several sets from various localities in west Africa,typical of the figures; Java, Indonesia(seem to be higher spired to some extant than those (con.)

from west Africa), but otherwise indistinguishable; Ceylon, set Ex. Hugh Fulton (labelled O. megalostoma (Meuschen), but the characters of this lot place them in this species or group. The status of the species megalostoma (Meuschen) remains a question with us. Tryon places it in the synonymy of O. hiatula (Gmelin). Another large set from Australia are typical other than being exceptionally large ranging to three inches.

Olivancillaria auricularia (Lamarck) 1810 Ann,du Mus.,xvi,p.523 Tryon,Man.Conch.,vol.V,p.90,pl.36,figs.91-94. Tryon discusses the species as follows," Brown or lead color,sometimes in the young shells with zigzag faint brown markings;fasciole and interior of aperture yellowish brown to chocclate.Length, 1.5-1.75 inches... Brazil to Patagonia. ..The young shell is much narrower in form, the contorted expanded lip and heavy columellar callus indicating the adult condition. O. aquatilis Reeve (fig.93), and O. contorplicata Reeve (fig.94) are both young shells. O. claneophila Duclos (fig.92) the adult form." End Tryon quote. We disagree with the findings of Tryon in at least one particular being disposed to recognize O.contorplicata (Reeve). Reeve,Conch.Icon.,pl.18,species 39 " This shell is remarkably distinguished by its broad gibbous growth, and enormous callous deposit on the upper part of the columella."End quote. This species is placed in the subgenus Lintricula H. and A. Adams by some, and considered a genus by others. We do not agree. Distribution: Brazil to Patagonia. We have large sets from Maldorado,Uruguay;Rio de Janeiro; Rio Grande do Sul,Brazil; Mar del Plata, Argentina. We have had the last set labelled O. aquatilis (Reeve), but are following Tryon and others here by placing this in the synonymy. The specimens match Reeve's figures,pl.18,species 38.

Olivancillaria contortuplicata (Reeve) 1850 Conch.Icon.,pl.20,f.51 Reeve describes the species as follows," Shell ovate,rather thin, gibbous and slightly inflated in the middle,spire short,acuminated callous,sharp at the apex,columella much arched,plaits peculiarly strongly twisted;blue-gray,encircled round the base with a narrow chestnut zone,columella white,interior of the aperture very dark chestnut. Hab. Senegal,West Africa....Very remarkably distinguished by a peculiar twisted growth of the plaited portion of the columella, above and around which is a depressed groove,colored by the same dark chestnut as the interior of the shell." End Reeve quote. Tryon,Man.Conch.,vol.V,p.91 places this in the synonymy of O.auricularia (Lamarck).
Reeve was in error on several species placing the locality in west Africa or other incorrect provinces. This is a species of eastern South America.
Distribution: We consider this species distinct, and have several sets from Uruguay and Argentina. W.H. Dall,Nautilus, vol.6,p.111, recognized this species from southern Brazil.

Olivancillaria deshayesiana (Ducros) 1857 Ducros de St.Germain, Rev.Crit.,p.86,t.3,figs,67,a,b.
Tryon,Man.Conch.,vol.V,p.90,pl.36,figs.89,90 defines the species as follows," Shell smaller, more swollen above than O.brasiliana, and with a proportionately heavier posterior callus. Color same as in O. brasiliana. Length 1 inch. Tryon states that this form seems intermediate between O. brasiliana and O. auricularia ," is much smaller but seems to be mature/ ..O. ovata Marrat (fig.90) is synonymous." End Tryon quote. (con.)

Dr. W.H, Dall recognized this species from the coast of southern Brazil,Nautilus,vol.6,p.111.
Distribution: Specimens before us from Rio Grande,Brazil, seem to meet all characters. Another set from Saco de Manguelia,Brazil, seem to be consistently much smaller but adult.

Olivancillaria gibbosa (Born) Test.Mus.Caes.,p.215
Reeve,Conch.Icon.,Oliva,pl.8,species 12,a,b, " Shell fusiformly-ovate,stout,very thick,very callous,spire acuminated,columella very callous,plaits almost buried; blue and pale yellow,mottled or streaked, with a conspicuous black-spotted yellow band at the base,spire and columella yellowish white,interior of the aperture bluish white." " This and the following species are both remarkable for the callous deposit of enamel on thee columella, which extends to and almost covers the spire." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.90,pl.36,figs.85-87. Tryon discusses this species as follows," Shell heavy,gibbous, the columella callous, especially the upper part; spire also callously thickened;cream-colored body whorl with zigzags and reticulations varying from ash-gray to orange and chocolate;fasciole yellowish,maculated with brown;columella and interior of aperture whitish. Length 1.5-2.5 inch ..Like *Olivancillaria* in form,but the sutural channel remains distinct on all the whorls of the spire." End Tryon quote.
This species is remarkable for the callous deposit of enamel on the columella, which extends to the spire;stout,thick;color blue or pale yellow,mottled or streaked,with a conspicuous yellow band at the base. Tryon placed this species in the genus *Agaronia* as the suture is distinct and not covered by a callus. We are not following Tryon in this assignment.
Charles W. Johnson,Nautilus,vol.42,p.13,1928,makes the following comment," This species seems to connect the genus *Olivancillaria* and *Agaronia* . Tryon placed it in the latter as the suture is distinct on the spire and not covered by a callous." End quote.
Johnson mentions the described color forms of Dautzenberg,but states that the form var.*flavescens* Melvill described by Dautzenberg is what he called var.*aurantia* Johnson in Nautilus,vol.28,p.103,1915.
J.C. Melvill,Proc.Mal.Soc.Lon.,vol.6,p.65, in a paper titled ,Note upon *Oliva gibbosa* Born and its limits of variation, discusses the color forms of the species listing them as follows: *flavescens* Melvill, yellowish flesh or orange;*fulgurans* Melvill, coffee and cream ground,with brown zigzag swatches irregularly spaced; *candicans* Melvill, entirely white; *cingulata* Sowerby.
Ph.Dautzenberg,Olivides de la Nouvelle Caledonie..1927,describes the color forms a s follows.

var. *candicans* Melvill . " Melvill has established the variety *candicans* on a specimen entirely white.Fig.308 of Marrat represents also a completely white example.

var. *cingulata* (Chemnitz) Sowerby Cat.mar.Gastropoda,p.13
An example of this rare variety or abnormality,has been presented by Melvill in 1889 to members of the Literary and Philosophical Society of Manchester. In his studies in 1904 on the variations of *O. gibbosa*,he said that since then he had seen two other specimens. We believe that we should adopt the name *cingulata* Chemnitz confirmed by Sowerby. It applies unquestionably to the same variety as *mediocincta* Melvill.

var.*flavescens* Melvill Proc.Mal.Soc.Lon.,vol.6,p.65 (con.)

Of a yellowish flesh color or orange,sometimes without a trace of pattern and sometimes ornamented with a pattern very similar to typical gibbosa but extremely faint. Distribution: Ceylon (de Robillard);Philippines (D.Dupuy).

var. fulgurans Melvill Proc.Mal.Soc.Lon.,vol.6,p.65
Based by Melvill on fig.12b of Reeve,this variety shows a coffee and cream background, with brown zigzag swatches,irregular and widely spaced.

Distribution of Olivancillaria gibbosa (Born) from some of the sets in the Burch collection: Bombay,typical and at least two of the color forms;Calcutta,India, another variable lot;Trincombie, Ceylon,a long series of obvious interest because they range from the very young to the adult in typical form seeming to clearly demonstrate that this species is separable from O. nebulosa; Bhuket,Thailand, exceptionally large specimens, of typical forms.

Olivancillaria labuanensis (Marrat)1871 Thes.Conch.,p.25,t.19, f.311,312
Tryon,Man.Conch.,vol.V,p.89,pl.35,f.81 describes this species as follows," Yellowish white to orange color,with an orange red or brown broad band covering the lower half of the body whorl,sutures fasciculated with brown. Length 1-1.25 inches, Borneo....This may be a variety of O. nebulosa, yet I think it has as good claims to specific distinction as most of the species." End Tryon quote.
We have failed to recognize this form in the Burch collection.

Olivancillaria lignecla (Reeve) 1850 Conch.Icon.,pl.21,sp.57,a,b,c
Reeve describes the species as follows," Shell ovate,rather swollen round the upper part,spire short,rather sharp,columellar plaits numerous,rather faint;fulvous or blackish brown,unspotted,basal zone paler,stained with blackish chestnut.interior of the aperture bluish white. Habitat unknown." End Reeve quote.
Tryon,Man.Conch.,vol.V,p.89,pl.35,fig.82 describes as follows,"Cone shaped;chestnut,the fasciole lighter,with chestnut markings,columella white,aperture bluish.Length 1 inch. ..I am not acquainted with this species; Marrat has omitted it, and Weinkauf has copied Reeve's figures and description." End Tryon quote.
We have not recognized this species.

Olivancillaria nana (Lamarck) 1810 Ann.du Mus,p.326
Tryon,Man.Conch.vol.V,p.91,pl.36,figs.96-100 describes the species as follows," Conical, the upper part of the body whorl overlaid with a yellowish callus,the fasciole also yellowish and obscurely maculated,rest of bpdy whorl cream color with chestnut longitudinal fulgurations,often broken up into nebulous spots;columella white, interior of aperture exhibiting the external colors through the shell.Length .75 inch. ..Gabon,W. Africa;So.Africa;Madagascar. "
" The West Indies have been cited as habitat for this species, I think erroneously. O. zenospira Duclos (fig.79), and O. millepunctata Duclos (figs.98,99, are synonyms." End Tryon quote.
Reeve,Conch.Icon,pl.23,species 66 defines the species," This little species is well characterized by its swollen callous growth round ~~t~~ the upper or posterior edge of the whorls,and by its zigzag style of painting." End quote. Reeve listed the species from the West Indies which is now known to be in error. This species was placed in the genus Micana Gray as type species. (con.)

Maurice Nicles,Moll.Test.Marins,Cote Occ.Afrique,1950,p.108,fig.191 and other authors on west Africa list this species and figure it well.
Distribution: A number of typical sets in the Burch collection, all from west Africa.

Olivancillaria nebulosa (Lamarck) 1810 Anim. sans Vert,vii,p.436
Anim.sans Vert.(Desh.Ed.) v.10,p.628
Reeve,Conch.Icon.,pl.16,species 32,a,b
Tryon,Man.Conch.,vol.V,p.89,pl.35,figs.83,84. Tryon defines the species as follows," Subcylindrical,spire moderately elevated;cream color,with zigzag ash or olive lines,merging into reticulations; fasciole orange brown,mottled with chestnut. Length 1.5-2 inches." End Tryon quote.
Both Reeve and Tryon state that this species has been confused with O. gibbosa Born,and has been supposed to be the young of that species. The young O. gibbosa,however, is much more inflated, and may be readily separated from nebulosa of the same size. The coloring is the same in both species.
Distribution from sets in the Burch collection: Ceylon, numerous sets; Travancore,So.India;Bhuket,Thailand;Puducurchi, nr.Trivandrum, South India;set ex. Hugh Fulton labelled, O. gibbosa nebulosa (Lam.).

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Specific names- Genus Olivancillaria d'Orbigny 1839

acuminata Lamarck 1810		
ancillarioides (Reeve)	=	O.hiatula (Gmelin)
annotata (Marrat)	"	O. acuminata (Lamarck)
aquatilis (Reeve)	"	O. auricularia (Lamarck)
auricularia (Lamarck)		
barthelmyi (Ducros)	"	O.acuminata (Lamarck)
brasiliana (Lamarck)1810		
candicans (Melvill)	"	O.gibbosa (Born)
carita (Marrat)	"	O. acuminata (Lamarck)
cincta (Reeve)	"	O. hiatula (Gmelin)
contorplicata (Reeve) 1850		
claneophila (Duclos)	"	O.auricularia (Lamarck)
deshayesiana (Duclos)1835		
flavescens (Melvill)	"	O.gibbosa (Born)
fulgurans (Melvill)	"	O.gibbosa (Born)
gibbosa (Born)		
hiatula (Gmelin)		
indusiaca (Reeve)	"	O.hiatula (Gmelin)
intricata (Marrat)	"	O.nebulosa (Lamarck)
labuanensis (Marrat) 1871		
lamarckii(Swainson)	"	O.hiatula (Gmelin)
ligneola (Reeve)1850		
mediocincta (Melvill)	"	O.gibbosa (Born)
millepunctata (Duclos)1835	"	O.nana (Lamarck)
modesta (Reeve)	"	O.acuminata (Lamarck)
nana (Lamarck)1810		
nebulosa (Lamarck)1810		
nitellina (Duclos)	"	O.hiatula (Gmelin)
ovata (Marrat)	"	O.deshayesiana (Duclos)
pallida (Swainson)	"	O.hiatula (Gmelin)
patula (Sowerby)	"	O.auricularia (Lamarck)
pinguis (Dillwyn)	"	O.brasiliana (Lamarck)
propatula (Conrad)	"	O.hiatula (Gmelin)
steeriae (Reeve)	"	O.hiatula (Gmelin)
subulata (Lamarck)	"	O.acuminata (Lamarck) (con.)

testacea (Lamarck) 1810 =
utriculus (Gmelin) 1790 " O.gibbosa (Born)
zenospira (Duclos) " O. nana (Lamarck)

Generic Names- Genus Olivancillaria d'Orbigny 1839
Agaronia Gray 1839
Anazola Gray 1858
Claneophila Gray 1858
Hiatula Swainson 1831-32
Lintricula H. and A. Adams 1853
Micana Gray 1858
Scaphula Swainson 1840
Utriculina Gray 1847

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Genus Ancilla Lamarck 1799

The number of generic names described for this group is probably greater than the number of recognized species involved.To be true, some of them are in synonyny. Others seem to us to have overlapping characters,which would account for the amusing fact that several current authors on the same fauna,and using the same generic names, easily succeed in disagreeing, with the result that we find the same species assigned to more than one of their genera. We see as little systematic advantage in having most of the species in a separate subgenus as we do in attempting to follow some others who would elevate them all to genera.However,some seem to be separable, and to form natural groups. We will describe these with the species involved in our final report,but in this paper we propose to list the type species first to be followed by others in alphabetical order.

Genus Ancilla Lamarck 1799 Type (by monotypy) Voluta ampla Gmelin
Ancillaria candida Lamarck Fide Woodring,1928
Woodring states," The subgenus Ancilla s.s.,characterized by its short spire,long aperture,wide siphonal notch,plicate inner lip, and wide groove along the border of the inner lip, is not found living in America" End quote.

Ancilla ampla (Gmelin) Syst.Nat.ed.xiii,p.3467
Tryon,Man.Conch.,vol.V,p.94,pl.37,figs.23,24--"Cylindrically oblong, acuminated above,inflated below,rather thin;white,often orange tinted on the spire.Length 1 1/5 inches. Red Sea,Ceylon,Mauritius, Philippines." Tryon states " Ancilla cylindrica Sowerby,pl.37,fig. 24 is the young. End Tryon quote.
Distribution in the Burch collection: Mauritius ex.W.F. Webb,typical; Ceylon, specimens typical in form,yellow brown.

Ancilla acuminata (Sowerby) Thes.Conch.,t.4,figs.66,67
Tryon,Man.Conch.,vol.V,p.93,pl.37,figs.18-20," Yellowish brown, lighter at the sutures and on the border of the fasciole, the latter being darker brown,columella white.Length 1.25-1.5 inches. Red Sea, Zanzibar...The narrower form is the only, and perhaps not sufficient distinction between this and the preceding species (A.cinnamonea Lam.). A.lineolata A. Adams (fig.19), and probably A. oryza Reeve (fig.20) are synonyms." End Tryon quote.
Maxwell Smith, Nautilus vol.26,fig.77 reports the species from Aden.

Ancilla albisulcata Sowerby Conch.Spec.,f.14-16
Tryon,Man.Conch.,vol.V,p.93,pl.37,fig.7. Tryon placed this species in the synonymy of A. cinnamonea Lamarck .
Maxwell Smith,Nautilus,vol.26,p.77,1912, lists Ancilla albisulcata Sowerby from Adon with the comment," A characteristic feature of this species is the long white columella."
We have not reicgnized it.

Ancilla albocallosa (Lischke) 1868 Diagnosen neuer meeres Conchylien von Japan,Mal.Bl.
T. Kira,Coll,Ill.Shells of Japan,pl.31,fig.4 (places in the genus Baryspira)
S. Hirase,Rev. by I. Taki,1955, pl.113,fig.8.
Tryon,Man.Conch.,vol.V,p.94,pl.37,fig.6. Tryon places the species in the synonymy of Ancilla rubiginosa Swainson.
Kuroda and Habe,Check List ...1952, list as a good species from Japan.
Distribution in the Burch collection: Sagami,Japan in 60 fms.,typical specimens; specimens tentatively placed here labelled from Kekai, Japan,subfossil.

Ancilla albozonata Smith 1904 Journ.Malac. XI:29
Shells one half inch,reddish brown,white band at the suture,another above the fasciole,columellar plaits brown,interior shaded light brown.
Bartsch,P.- Bull.91, U.S.N.M.,Rept.Turton.Coll.,Port Alfred,p.35
Distribution in the Burch collection: Poudoland,Africa,ex.W.F. Webb; Port Elizabeth,South Africa, ex. J.D. Staid; Jeffrey's Bay,South Africa (Ackermann),

Ancilla angustata (Sowerby) Thes.Conch.,63,t.1,f.13
Tryon,Man.Conch.,vol.V,p.95,pl.38,fig.35," Narrowly cylindrical, transparent fawn color,callosity and fasciole shining orange-brown, edged with white.Length 12 mill. China...Possibly the young of A. rubiginosa Swainson." End Tryon quote.
We do not know this species.

Ancilla apicalis Is.Taki 1955
T. Kira,Coll.Ill.Shells of Japan,pl.31,fig.2. Kira places the species in the genus Turrancilla.
Distribution in the Burch collection: Tosa,Japan in 200 fms.; another lot labelled Kii,Japan in 100 fms.

Ancilla australis (Sowerby)1830 Spec.Conch.,p.9,t.440-446
Tryon,Man.Conch.,vol.V,p.94,pl.38,figs.28-33," Lead-color or violet brown,spire and upper portion of the body whorl as well as the fasciole enveloped in yellowish callus,marbled with chestnut.Length .75-1.75 inches. Australia,New Zealand,Tasmania,Cape." Tryon placed a number of species in the synonymy which we propose to follow in part only.

This species with others closely related has been placed in the genus Baryspira Fischer 1883 ,Man. de Conch.,fasc.6,p.600,type species (by subsequent designation,Cossmann,1899);Ancillaria australis Sowerby = Ancilla australis (Sowerby). We suggest that this may be accepted as subgenus Baryspira ,if it proves to be consistently separable from other groups.
Suter,H.,Man.N.Z.,Moll.,1913,p.451,pl.49,fig.1- A detailed description. Type in the British Museum. Remark- " The species taken for A rubiginosa have a very thick callus on the spire." (con.)

A.W.B. Powell,Shells of New Zealand,1957,pl.8,fig.30.
B.C. Cotton,Roy.Soc.So.Australia,Olividae,1955,commants ,This is the common species from New Zealand. Ancilla (Baryspira) edithae Pritchard and Gatliff 1899 is the South Australian form and is predominantly brown, and smaller." End quote.
Ancilla obtusa Swainson from South Africa, is a much larger and more robust shell which we consider distinct, but seems to be closely allied to this group. Tryon placed it in synonymy.
Distribution in the Burch collection: Many localities from New Zealand,Tasman Bay,Warkowai,Opotiki,Bay of Plenty,St.Helens Bay, Auckland,Pakawai,Collingswood,Nelson.South Island...

Ancilla australis bathami (Dell) 1956 Arch.Moll.of N.Z.,p.124, fig.173. Following the detailed description the author comments, " This species has the general characters of the mucronata-australis series,but differs markedly in the broadly pointed spire,the swollen body whorl, and the distinctive color pattern which appears to be constant...Type locality, off East Otago in 250 and 300 fms. Types in the Dominion Museum,Wellington. Color of spire whorls white with salmon suffusion extending down from each suture.Body whorl light pink,columella and outer lip white,interior of aperture pink. Basal limb white suffused with pink,raised in the middle..." Described and well figured as Baryspira bathami Dell 1956.
This may be a distinct species, but other than the color,seems to be a deeper water form of the common Ancilla australis (Sowerby).

Ancilla depressa (Sowerby) 1859 Thes.Conch.,iii,63,pl.211,fig.3 A.W.B. Powell,Shells of New Zealand,1957,p,106,pl.8,fig.32,treats as a valid species. Tryon,Man.Conch.,vol.V,p.94,placed it in the synonymy of A. australis (Sowerby). H. Suter,Man.Zew Zealand Moll. p.454,pl.49,fig.3. A detailed description;considers it a valid species,but seems to be a small obese form and until otherwise convinced, we propose to leave it in the synonymy of A. australis (Sowerby). Type in the British Museum.

Ancilla mucronata (Sowerby) 1830 Spec.Conch.,p.8,figs.47,48 Suter,Henry-Man.N.Z. Moll.,p.455,pl.49,fig.4. A detailed description here. Suter considers this a good species and places it in his key to species. However, the description as well as the figures indicate a shell that is separable from A. australis with difficulty. Suter's comments are of rather more interest than his key and description. " Remark- I have never seen this species in the littoral zone. Type in the British Museum."
Reeve lists the species from Tasmania and Australia. This is considered erroneous. A.W.B. Powell,Shells of New Zealand,1957,p.106, p.18,fig.31, lists this as a good species. Tryon and others have placed it in the synonymy of A. australis(Sowerby). The variation of characters seems to be minor,and until otherwise convinced, we are leaving it in the synonymy of Ancilla australis.
Distribution in the Burch collection: Auckland Harbor in 7 fms.; Queen Charlotte Sound in 5 fms.; one set is of possible interest labelled " from a schnappers stomach,20 fms. off Waiheke Island, New Zealand," assigned to this form but seem to represent a very small variation of A. australis.
Perhaps it could be admitted as a subspecies.

Ancilla edithae Pritchard and Gatliff 1899
B.C. Cotton,Ray.Soc.So.Austr.,Olividae,1955,fig.14 as *Baryspira edithae* ," Orange brown,dark band around the base,tan flames below the suture and above the basal band. One half inch."
Distribution in the Burch collection: Australia ex. Hugh Fulton; numerous sets from South Australia,of which the shells are predominantly orange brown.
This may be separated from *A. australis* (Sowerby) questionably and with difficulty.

Ancilla balteata (Swainson) Journ.Sci.,vol.18,p.284
Tryon,Man.Conch.,vol.V,p.97,pl.39,fig.57," Yellowish white to orange yellow,whorls angularly belted around the upper part,basal groove broad,whitish.Length 1.5-2 inches. Ceylon. ..The locality appears to be undoubted and all the specimens I have seen are alike, yet it seems to be abnormal in its posterior angulation, and to resemble otherwise a stunted *A. glabra*." End Tryon quote.
We are not familiar with this species.

Ancilla beachportensis Verco 1909
South Australis in 100 fathoms.
B.C. Cotton,Olividae,1955,fig.15.Cotton places the species in the genus *Aulocospira* Cossmann, and describes it as follows,"Bluish grey,spiral called white,protoconch papillate. Three quarters of an inch."
We have not recognized this species.

Ancilla booleyi Melvill and Sykes 1896 Proc.Mal.Soc. Lon.vol.2, p.166,pl.13,fig.13," An interesting *Ancilla* ,though amongst the smaller species of this circumscribed genus.It somewhat recalls *Agaronia* in the disposition of its markings,being oblong,thin,six whorled,pale ashy-white,marked below the sutures and over the greater portion of the last whorl with rufous spots, or zigzag markings. The mouth is ovate-oblong,lip simple. We name it after its discoverer, Mr. G.H. Booley, of Port Blair." Andaman Island Shells.
We have not seen this species.

Ancilla bulloides Reeve 1864 Conch.Icon,t.10,fig.37,a,b
Tryon,Man.Conch.,vol.V,pl.38,fig.36," Delicate fawn color,callosity broad,opaque,white. Length 28 mill. Habitat unknown. ..Perhaps a shell of *A. rubiginosa* . The type specimen only is known, and its peculiarly long spire might be an individual variation of growth." End Tryon quote. We have not seen this species.

Ancilla castanea (Sowerby) Spec.Conch.,20-23
Tryon,Man.Conch.,vol.V,p.93,pl.37,fig.10 lists this species in the synonymy of *Ancilla cinnamonea* Lamarck.
Maxwell Smith,Nautilus,vol.26,p.77,1912 lists *A. castanea* Sowerby from Aden with the comment," I am inclined to believe that this species will prove to be a variety of *fulva* Swainson. The color is the only distinction." It may also be added that Tryon placed *A. fulva* also in the synonymy of A. cinnamonea Lamarck.
We do not know the species.

Ancilla cingulata (Sowerby) 1830 Spec.Conch.,f.6
Tryon,Man.Conch.,vol.V,p.95,pl.38,figs.37,38," Shell thin,whitish, yellowish or pale cinnamon color,with a white sutural band,and a revolving brown band above and on the fasciole.Length 2-2.5 inches. Distinguished from A. rubiginosa Swainson by its thin substance and inferior dark band...A.sirilis (Sowerby) (fig.38) is probably a faded variety." End Tryon quote.
Didtribution in the Burch collection: Many beautiful sets from North Queensland,Australia,

Ancilla cingulata velesiana (Iredale) 1936
Iredale makes this the type species of a genus Ancillista Iredale 1936.,(Ancillista velesiana Iredale). The genus Ancillista is to contain also Ancilla cingulata (Sowerby) 1830. Fide B.C. Cotton, Olividae,1955.
Joyce Allan,Australian Shells,1950,p.174,Col.pl.25,fig.3,illustrates Ancilla cingulata (Sowerby) stating that it can be separated from A. velesiana (Iredale) because it is narrower in proportion, and has a second tan band above the deep one,followed by a sharp ridge. A. velesiana is presumed to be the species of New South Wales and A. cingulata the one from northern Australia. Our observation of the numerous sets before us is that the dark band on the body whorl is lower on the columella and body whorl in proportion to the aperture, and the entire shells somewhat more obese on most of the specimens from New South Wales. Those from northern Australia labelled A. cingulata cingulata are more slender. However, it is to be questioned whether or not these are consistent characters. Some sets seem to merge into each other. Therefore, we are considering A. velesiana to be a recognizable southern race of cingulata , but with intergrades present.
Distribution in part from the Burch collection: Newcastle, New South Wales in 15 fms.; Hawkesnest Beach,Port Stephens,N.S.W.; brought up by prawn fishermen off Evans Head,N.S.W. (finest set at hand, 3 3/4 inches.).

Ancilla cinnamonea (Lamarck) Ann.du Mus.,16:304
Tryon,Man.Conch.,vol.V,p.93,pl.37,figs.2-17," Yellowish white,with obscure revolving bands and longitudinal strigations of light reddish brown,or without markings,and ranging from flesh color to cinnamon and dark chocolate; occasionally a revolving sulcus terminates in a slight horn on the outer lip; the folded columella is white,the interior of the aperture nearly corresponding with the outer surface in color. Length 1-1.25 inches." End quote.
Tryon has an extensive synonymy for this species which we have followed in part. Red Sea,Persian Gulf,Zanzibar.
Distribution in part in the Burch collection: Tanga,Tanganyika, Africa, (This lot recently received unclassified are cinnamon to chocolate in color,the folded columella white,interiorof aperture same color as the outer surface.We assigned to this species.); Red Sea ex. W.F. Webb (Set labelled A. ventricosa (Lamarck) ; Moluccas ex.Maxwell Smith, also labelled A. ventricosa (Lamarck) .
It seems to us that if it is possible to recognize A. ventricosa as separable from A. cinnamonea ,it must be on very slight grounds. We have placed A. ventricosa in the synonymy.

Ancilla coccinea Hedley 1914 S.W. Australia in 75-140 fms.
B.C. Cotton,Olividae,1955, places the species in the genus Alocospira . We do not know the species.

Ancilla contusa (Reeve)1864 Conch.Icon.,t.9,f.31,a,b
Tryon,Man.Conch.,vol.V,p.93,fig.15. Tryon places this species in the synonymy of A.cinnamonea (Lamarck).
However, the specimens before us from Natal in 40 fathoms seem to fit Reeves species. Whether or not this species will intergrade with the others is doubtful, but must be shown with further study is possible.

Ancilla crassa (Sowerby) Thes.Conchb 60,t.4,figs.86,90,91
Tryon places this in the synonymy of A. cinnamonea (Lamarck) , Tryon, Man.Conch.,vol.V,p.93,pl.37,fig.13.
However, the sepecies seems to us to be separable.
One set in the Burch collection was labelled with this name ex. Hugh Fulton, from Aden. The shells are about ½ inch,ivory color, orange brown at spire,columella white,interior orange tinted.

Ancilla decipiens Sowerby
Bartsch,Rept.Turton Coll.,Bull.91,U.S.N.M.,1915,p.34
One set in the Burch collection has been assigned to this species, a set from Poudoland,Africa ex. W.F. Webb. These shells show an obvious relationship to the A. cinnamonea (Lamarck) group. All are dead shells and show tinges of dark lavender both on the spire and the fasciole.

Ancilla dimidiata (Sowerby) Thes.Conch.,62,t.3,figs.55,56
Tryon,Man.Conch.,vol.V,p.96,pl.39,fig.50," Rather thin,transparent white,sutural band which is very broad,opaque white. Length .9 inch. Red Sea.. I am not acquainted with this species; it looks as if it might be the young of A. elongata (Gray)" End quote.
Note- A. elongata (Gray) = A.muscae Pilsbry.
We do not know this species.

Ancilla dyspetes (Iredale) 1928
B.C. Cotton,Olividae,1955 lists this species from Victoria and New South Wales. He places it in the genus Alocospira.
We do not know this species.

Ancilla eburnea (Deshayes) Lam.Nat.Hist. ed.X,p.591
Tryon,Man.Conch.,vol.V,p.93,pl.37,fig.16. Tryon places this species in the synonymy of A. cinnamonea (Lam.) ,but we are disposed not to follow this assignment.
Distributiom: Set from Kurachi,India, ex. Hugh Fulton. Shells are small, about 1/2 to ½ inch.,flesh color, few markings,high spire.

Ancilla errorum Tomlin 1921 Jour.Conch.,vol.16,1921,p.216,pl.8,f2
Type locality,Cape Point in 42 fathoms. Operculum also figured. Tomlin describes as follows," Shell very similar to A.angustata (Sowerby), but with a spire that is longer,more acuminated and less callused;color of body whorl pale,instead of liver colored;color below columellar band white and sharply defined. Upper part of columella spirally grooved within aperture;lower part deeply longitudinally grooved as in angustata ,but with five grooves instead of three." End quote. We have not seen this species.

Ancilla exigua (Sowerby) Spec.Conch. Anc.,p.6,figs.33,34,35
Tryon,Man.Conch.,vol.V,p.91,pl.37,fig.1. Tryon places this species in the genus Monoptygma Lea. However,Sowerby and others have considered this a valid subgenus of Ancilla, although it might seem that the tooth like plica on the columella may be more of a generic

character than many in use. Tryon states," Genus Monoptygma Lea , several systematists have confounded the name with Monoptygma Gray, an entirely different group. The type,although a very small shell, perfectly exhibits the generic characters, but Lea's second species belongs to Actaeonidae. Chiloptygma H. & A. Adams, must, according to the description, become a synonym;but it may very well be doubted whether its only species and specimen (therefore the only recent species of Monoptygma is not a monstrocity." .." Under this genus Tomlin places M.alabamensis Lea (pl.3,fig.23),Fossil,Eocene,Alabama, and Ancilla exigua (Sowerby) ,pl.37,fig.1..,Yellowish white,very shining,callous; callosity ridged on the body whorl. Length 12 mill. This specimen formed part of the Cumingian collection." End quote.
Note- See Sowerby's description of Ancilla (Monoptygma) unidentata 1894,a second recent species of this group.

Ancilla fasciata (Reeve) 1864 Conch.Icon.,t.11,fig.44,a,b
Tryon,Man.Conch.,vol.V,p.94,pl.37,figs.23,24. Tryon places this species in the synonymy of A.marmorata (Reeve) ,but with uncertainty stating that it may be the young of A.marginata (Lamarck).We think that they are not juvenile so can cancel that, but the possibility of A. marmorata remains a question. Paul Bartsch,Rept.Turton.Coll., Bull.91,U.S.N.M.,p.35 (Port Alfred).
Distribution in the Burch collection: Poudoland,Africa ,ex.W.F.Webb; Jeffrey's Bay, South Africa;Port Alfred,South Africa.
Shells are white,reddish brown band at the suture,another on the fasciole,columellar plaits same color.

Ancilla fulva (Swainson) Journ.Sci.,vol.18,p.283
Tryon,Man.Conch.,vol.V,p.93,pl.37,fig.5, Tryon places this species in the synonymy of A. cinnamonea (Lamarck). There may be intergrades, but the specimens before us match Swainson's figure. Shells about one inch,light chocolate,obscure revolving bands,folded columella white,interior same color as surface.
Distribution: Karachi,India ex. W.F. Webb.
Maxwell Smith,Nautilus vol.26, p.77,1912, lists this species from Aden with comment, " The columella of this species is considerably thickened at the base."

Ancilla fusiformis Petterd 1886
B.C. Cotton,Olividae,1955, lists this species from Tasmania,Victoria, and New South Wales. Places in genus Alocospira.
We do not know the species.

Ancilla fusiformis gaza (Iredale) 1924
B.C. Cotton,Olividae,1955, lists from New South Wales,Merimbula, and places in genus Alocospira.
We have not seen the species.

Ancilla glabrata (Linnaeus) 1758 Systema Naturae,ed.10,p.739, No.406,(Buccinum glabratum L.) (renamed Eburna flavida by Lamarck). Tryon,Man.Conch.,p.96,pl.39,fig.54," Yellowish white to orange,white bordered at the sutures and on the supra-fasciolar groove,columella and callus white. Length 2-3 inches." End quote.
Distribution: West Indies from numerous localities;Yucatan,Mexico, large and fine .
Subgenus Eburna Lamarck 1801 -Type (by monotypy)-Buccinum glabratum Linnaeus. Woodring,W.P.-Miocene Moll.from Bowden,Carnegie Inst. 1928." Shell reaching a large size,polished,stout,spire high. (con.)

Callus concealing suture,aperture wide,siphonal notch wide and deep. Siphonal fasciole bordered by a wide V-shaped groove that produces a tooth-like projection on the basal part of the outer lip.Columella bearing a narrow projecting basal twist.Inner lip bearing obscure plications.Beyond edge of inner lip lies a ridge of callus.Parietal callus standing out from the parietal wall,producing a wide long umbillicus. Callus above suture at edge of outer lip bearing a triangular depression. The open umbilicus is characteristic of Eburna. *Ancilla glabrata* , the type species of *Eburna* , shows no trace of spiral threads on the callus, and the groove producing the tooth-like projection on the outer lip lies at the middle of the band adjoining the siphonal fasciole,and not at its posterior edge.The parietal callus of *glabrata* stands farther out from the parietal wall,producing a longer umbilicus." End Woodring quote.

Ancilla hilgendorfi (v.Martens) 1897 Conchologischer Miscellen, Part 2,Archiv. F.Naturg.,vol.63, Japan
Kuroda and Habe,1852
We are not familiar with this species.

Ancilla lienardi (Bernardi) 1858 Jour.Conch.,2nd ser.,vol.3,p. 202,pl.x,fig.4.
Reeve,Conch.Icon,f.50,b,c. Tryon,Man.Conch.,vol.V,p.97,pl.39,figs. 55,56," Light yellow to deep orange,basal groove white;columella , callus and interior white. Length 1.25-2 inches. Pernambuco,Brazil. Proportionately much wider, with shorter spire than *A. glabrata* , yet I suspect that it is a mere variety of that species." End Tryon quote.
Distribution in the Burch collection: Set of specimens simply labelled, Brazil, ex. W.F. Webb, but they are a deep orange, much ~~m~~ more obese than *A. glabrata* and fit the description perfectly.

Ancilla mamillata (Hinds) 1843 Voy.Sulphur,Moll.t,11,figs.7,8
Tryon,Man.Conch.,vol.V,p.94,pl.38,fig.26. Tryon places this species in the synonymy of *A. rubiginosa* (Swainson), but the specimens before us seem to be seperable and to match all figures. Set labelled Hong Kong, ex. Hugh Fulton. Shell is flesh color;revolving polished darker band at suture,and another above the fasciole;yellow tint to the fasciole,columella twisted below, white. About one inch.

Ancilla marginata (Lamarck) 1810 Ann.du Mus.,16:304
Tryon,Man.Conch.,vol.V,p.96,pl.39,figs.44-48," Yellowish or gray, a white band below the sutures,maculated with orange brown, a row of maculations above,and another on the fasciole. Length 1.5-1.75 inches." End quote. Tryon placed a number of species in the synonymy followed by us only in part.
May and Macpherson,1958,Ill.Index,Tasmanian Shells," common at times in Frederick Henry Bay.". Placed in genus *Alocospira* Cossmann.
B.C. Cotton,Olividae,1955, also places in *Alocospira*.

Ancilla marmorata (Reeve) 1864 Conch.Icon.t,9,figs.32,a,b
Tryon,Man.Comch.,vol.V,p.92,pl.37,figs.21,22," Whitish,faintly streaked and mottled with fulvpus flesh-color,brown-tinged at the suture and above the fasciole,columellar plaits brown.Length .75 inch. Habitat unknown." end quote
We are not familiar with this species. See notes under *A.fasciata* (Reeve).

Ancilla mauritiana (Sowerby) 1830 Spec.Conch.,p.3,figs, 1,2 Tryon,Man.Conch.,vol.V,p.96,pl.39,figs.51-53," Shell ovate,thin, spire depressed,body whorl shouldered,aperture wide,columella scarcely plaited,outer surface closely but lightly covered with revolving striae;yellowish white to orange brown. Length 1.75-2.25 inches. Madagascar,Mauritius,Australia. " End quote. Tryon places this species in the genus *Anolacia* Gray. Tryon states," This is the *A. torosa* Meuschen, according to Sowerby, a name under which it is well known. In synonymy, *A. scaphella* (Sowerby), *A.aperta* (Sowerby),figured as miniatures of this species." End quote. Distribution in the Burch collection: large sets from Mauritius, deep yellow; specimens from Ceylon are pure white, other characters typical.

Ancilla monilifera (Reeve) 1864 Conch.Icon.,t.10,figs.36,a,b B.C. Cotton,Olividae,1955,no.6,fig.18," Shining white,reticulated with orange brown,sutures filleted with orange brown spots.Three quarters of an inch." End quote. Placed in genus *Alocospira* Cossmann 1899.
Tryon,Man.Conch.,vol.V,p.96,pl.39.figs.44-48. Tryon places this species in the synonymy of *Ancilla marginata* (Lamarck). They must be close because Tryon's description would fit the specimens before us labelled *A. monilifera*. Tryon places in synonymy also *A.lineata* Kiener,*A.oblonga* (Sowerby), and *A. obesa* (Sowerby). Cotton places in the synonymy of *A. monilifera*, *A. lineata* (Kiener) 1844, not Perry 1811.
Distribution in the Burch collection: Dunn Bay,S.W.Australia;Long Reef,Bollorong,Sydney, N.S.W.; several lots from New South Wales, various localities.

Ancilla montrouzieri Souverbie 1860 Journ. de Conchyl.,viii,207, 4 324,fig.3. Isle of Pines,New Caledonia. The species is said to be endemic to this locality.
Tryon,Man.Conch.,vol.V,pl.38,fig.34," Pinkish white, or light fawn color, the spire and an upper band of the body whorl invested with a thick flesh colored or slightly brownish callus;sometimes the spire and fascicle are pure white; operculum oblong,rather large and thin. Length 1-1.5 inches. New Caledonia." End quote. We have not seen this species.

Ancilla muscae Pilsbry 1926 Nautilus,vol.39,p.104 ," new name for *Ancillaria elongata* Gray 1847 (Narrative of the Surveying Voyage of the H.M.S.S. Fly,II,Appendix,p.357); not *Ancillaria elongata* Deshayes 1830 (Encyclopedie Methodique II,p.45).
All references to this species as *Ancilla elongata* (Gray),1847, now replaced by *A. muscae* Pilsbry.
Tryon, Man.Conch.,vol.V,p.96,pl.39,fig.49," Thin,white,sutural band ivory white,columella not plaited. Length 2.25 inches." End Tryon quote.
B.C. Cotton,1955, Olividae,no.6,fig.20, placed the species in genus *Amalda* H. and A. Adams 1853, type species, *A.elongata* (Gray).
We have before us beautiful shells of this species from Pender Bay,N.W. Australia, others from Roebuck Bay, Western Australia. It would seem that if we are to break up the genus *Ancilla* into subgeneric groups, this seems to be sufficiently distinct.

Ancilla novaezelandiae (Sowerby) 1859 Thes.Conch.,65,t.3,f.48,49 Powell,A.W.B., Shells of New Zealand,1958. Places in genus *Baryspira* . Tryon,Man.Conch.,vol.V,p.95,fig.32. Tryon places in the synonymy of *A. sinensis* Sowerby. We are disposed to not accept this assignment.

Ancilla novaezelandiae benthicola (Dell) 1956 Arch.Moll.of N.Z., p.124,figs.174,175. The author states in the detailed description " Young shells of the deep water form appear indistinguishable from *novaezelandiae* ,but older shells acquire a heavy,bulbous deposit of callus on the upper whorls and on the upper portion of the body whorl."
Distribution: On the Chatham Rise in 196 to 300 fms. Placed in genus *Baryspira.* From the figures and description this would seem to be a recognizable deep water form.

Ancilla obesa (Sowerby) 1859 Thes.Conch. 65,t.3,figs.44,45 P. Bartsch,Bull.91,U.S.N.M.,Rept. on the Turton Coll.,Port Alfred, p.35. Tryon,Man.Conch.,vol.V,p.96,pl.39,fig.48. Tryon in placing in the synonymy of *Ancilla marginata* (Lamarck) states that specimens before him showed all variations in form. We are inclined to question this.
Distributiom: Port Elizabeth,South Africa;Sea Point,So. Africa; another set from The Kowie ,South Africa, ex. Hugh Fulton.
Shells are small, one half inch,orange brown,a row of maculations above, and another on the fasciole.

Ancilla oblonga (Sowerby) 1830 Spec.Conch.,p.7,figs.38,39. B.C. Cotton, 1955,Olividae,no.6,fig.16, states, " Whitish,purple-brown, banded at the sutures,red-flamed cream sutural bands. One inch. ". Cotton placed in the genus *Alocospira.* May and Macpherson,1958,Index Tasmanian Shells, places it in genus *Alocospira* with comment," North,small and narrow".
Tryon,Man.Conch.,vol.V,placed this species in the synonymy of *Ancilla marginata* (Lamarck) 1810.
Distribution: Tumby Bay,South Australia; another lot simply labelled South Australia ex.Hugh Fulton, are much more slender than the Tumby Bay specimens, but with the same markings.

Ancilla obtusa (Swainson) Journ. Sci.,xviii,p.282. Tryon,Man.Conch.,vol.V,p.94,pl.38,figs.32,33. Tryon placed this species with doubt in the synonymy of *Ancilla australis* (Sowerby). It is apparent that the species is in some respects and in some characters closely related to *A. australis*, but we consider it a distinct species. It is in the *Baryspira* group.
Distribution: Numerous sets from South Africa, various localities, including several from Jeffrey's Bay.

Ancilla ordinaria E.A. Smith
P. Bartsch,Bull.91,USNM,p.229- Bartsch lists from Port Shepstone. Set of specimens in the Burch collection labelled Poudoland,Africa, ex. W.F. Webb. These are small shells, less than one half inch and pure white, In form, they might be albino forms of A.*fasciata*(Reeve).

Ancilla osculata (Sowerby) 1900 Pro.Mal.Soc.Lon.,4:3,pl.1,fig.6. " An *Ancilla* of somewhat unusual form having the appearance of a small *Bullia*." Pondoland,South Africa.
We have not seen this species.

Ancilla papillata (Tate) 1889
This is the type species of the genus Alocospira Cossmann,1899, fide B.C. Cotton,Olividae,1955. Listed as a fossil from Muddy Creek,Upper beds,Victoria,Australia.
We have not seen this species.

Ancilla petterdi (Tate) 1893
B.C. Cotton,1955,Olividae,fig.17, states," White with chalk white sututal bands. Three quarters of one inch.Outer Harbor,South Australia". Cotton places this species in the genus Baryspira, but May and Macpherson,1958,Ill.Index Tasmanian Shells, places the species in genus Alocospira with comment," North coast and Bass Straits,short,whitish with keeled spire."
We have not seen the species.

Ancilla pura (Sowerby) 1901 Proc.Mal.Soc.Lob. 4:213
Paul Bartsch,Bull.91,U.S.N.M.,1915,p.35, Turton Coll.,Port Alfred.
Set before us from the Kowie,South Africa ex.W.F. Webb.

Ancilla reevei Smith
Bartsch,Bull.91,U.S.N.M.,p.35,Port Alfred.
Specimens before us from Jeffrey's Bay; Port Alfred.

Ancilla rubiginosa (Swainson) 1830 Zool,Ill.,ii,t.4
Tryon,Man.Conch.,vol.V,p.94,pl.37,fig.25;pl.38,figs.26,27.
Tryon defines the species," Cinnamon brown,with an enameled lighter band at the suture, and a shallow impressedone above the fasciole. Length 2-2.5 inches. Japan,China,Malacca,Madagascar." End quote.
See notes under A.mamillata and A.albocallosa (Lischke).

Ancilla sinensis (Sowerby) Thes.Conch.,t.3,figs.50,51.
Tryon,Man.Conch.,vol.V,p.95,figs.41-43," Transparent white, the callosity opaque white,length .8 inch. Japan,China,Australia. .. A juvenile shell, very probably equivalent to A. rubiginosa (Swainson). A. novaezelandiae (Sowerby) (fig.42), is a synonym, and I suppose the A. inornata(E.A. Smith) fig.43) may also be placed here."
We are not disposed to follow Tryon with the synonymy.
Kuroda and Habe,1952, recognize both A. sinensis and A.inornata as distinct species from Japan.

Ancilla southlandica (Fleming) 1948 New species and genera of marine mollusca from the Southland Fiords 1948,p.90.
Powell,A.W.B.- Shells of New Zealand,1957.
We have not seen this species.

Ancilla tankervillei (Swainson) Jour.Sci.,xviii,p.283
Tryon,Man.Conch.vol.V,p.95,pl,38,fig.39;pl.39,fig.40," Fusiformly oblong,moderately ventricose,yellowish white to orange yellow, darker about the sutures and on the fasciole. Length 2.25-3.75 inches...The only typical species inhabiting the Western Hemisphere. I am not able to separate O.vernedei Sowerby(fig.40),described from a single specimen, and doubtfully referred to China Seas as its habitat. Specimens of A. tankervillei before me agree exactly with the figure of vernedei, except that the latter is larger." End Tryon quote.
A. tankervillei is a species of the fauna of the West Indies and Caribbean. Large sets in the Burch Coll.from Porlomar,Venezuela.

Ancilla tasmanica (Tenison-Woods) 1876 Pr. R.Soc.,Tasmania
Tryon,Man.Conch.,vol.V, places this species in the synonymy of or a variety of *Ancilla marginata* (Lamarck).
B.C. Cotton,Olividae,1955, lists the species placing it in genus *Alocospira*. We have not recognized the species.

Ancilla unidentata (Sowerby) 1894 Pro.Mal.Soc.Lon.,1:160,pl.12 fig.20. Habitat,Bay of Zaila, " A bright shining little shell, of which the spire is covered with a dark brown enamel. It forms the second recent species of Lea's genus *Monoptygma*, characterized by a tooth-like plica above the middle of the columella."
We have not seen the species.

Ancilla urasima (Is.Taki) 1955
Kii, Japan. Kira,t,Col,Ill.Shells of Japan,pl.31,fig.3. Kira places the species in the genus Baryspira.
We have seen neither the original description nor specimens.

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Specific Names- Genus *Ancilla* Lamarck 1799
achatina (Kiener) = Ancilla cinnamonea (Lamarck)
acuminata (Sowerby)
albifasciata (Swainson) " " cinnamonea (Lamarck)
albisulcata (Sowerby)
albocallosa (Lischke)1868
albozonata (Smith) 1904
ampla (Gmelin)
angustata (Sowerby)
aperta (Sowerby) " " mauritiana(Sowerby)1830
apicalis (Is.Taki) 1955
australis (Sowerby) 1830
balteata (Swainson)
bathami(Dell) 1956 " " australis (Sowerby)
beachportensis (Verco)1909
bicolor(Gray) 1847 " " australis (Sowerby)
booleyi (Melvill & Sykes) 1896
bullioides (Reeve)
castanea (Sowerby) " " cinnamonea (Lamarck)
cingulata (Sowerby) 1830
cinnamonea (Lamarck)
coccinea (Hedley) 1914
contusa (Reeve)
crassa (Sowerby)
cylindrica (Sowerby) " " ampla (Gmelin)
decipiens (Sowerby)
depressa (Sowerby) 1859
deshayesii (A. Adams) " " cinnamonea (Lamarck)
dimidiata (Sowerby)
dyspetes (Iredale) 1928
eburnea (Deshayes)
edithae (Pritchard & Gatliff) 1899
elongata (Gray) 1847 " " muscae Pilsbry 1926
exigua (Sowerby)
fasciata (Reeve)
flavida (Lamarck) " " glabrata (Linnaeus)
fulva (Swainson)
fusiformis (Petterd)1886
fusiformis gaza (Iredale) 1924
gaza (Iredale) 1924 " " var. of A.fusiformis(Ire.)
glabrata (Linnaeus) 1758

hilgendorfi(v.Martens) 1897
inornata (E.A. Smith)
lienardi (Bernardi)
lineata (Kiener) 1844 = Ancilla marginata (Lamarck)1810
lineolata (A. Adams) "" " acuminata (Sowerby)
mamillata (Hinds)
marginata (Lamarck)1310
marmorata (Reeve)1864
mauritiana (Sowerby) 1830
monilifera (Reeve) 1864
montrouzieri (Souverbie) 1860
mucronata (Sowerby) 1866 " " australia (Sowerby)
muscae Pilsbry 1926
novaezelandiae (Sowerby) 1859
novaezelandiae benthicola(Dell) 1956
novaezelandiae crystallina (Brookes)1926
obesa (Sowerby)
oblonga (Sowerby) 1830
obsecula (Tate) not Deshayes " " petterdi (Tate)1883
obtusa (Swainson)
obtusa (Petterd) not Swainson " " petterdi (Tate)1883
ordinaria (E.A. Smith)
oryza (Reeve) " " acuminata (Sowerby)
osculata (Sowerby)1900
ovalis (Sowerby) " " cinnamonea (Lamarck)
papillata (Tate) 1889
petterdi (Tate) 1893
pura (Sowerby)
pyramidalis (Reeve) " " australis (Sowerby)
reevei (Smith)
rubiginosa (Swainson) 1830
sarda (Reeve) " " cinnamonea (Lamarck)
scaphella (Sowerby) " " mauritiana (Sowerby)
similis (Sowerby) " " cingulata (Sowerby)
sinensis (Sowerby)
southlandica (Fleming) 1948
striolata (Sowerby)
tankervillei (Swainson)
tasmanica(Tenison-Woods) " " marginata (Lamarck)
torosa (Meuschen) " " mauritiana(Sowerby)
tricolor (Gray) " " australis (Sowerby)
tronsoni(Sowerby) " " cinnamonea (Lamarck)
unidentata (Sowerby) 1894
urasima Is.Taki 1955
variegata (Sowerby) " " cinnamonea (Lamarck)
ventricosa (Lamarck) " " cinnamonea (Lamarck)
vernedei (Sowerby) " " tankervillei (Swainson)

Generic Names- Genus *Ancilla* Lamarck 1799
Alocospira Cossmann 1899
Amalda H. & A. Adams 1847
Anaulacia P. Fischer 1883
Anaulax Roissy 1805
Ancilla Lamarck 1799
Ancillaria Lamarck 1811
Ancillarina Bellardi 1882
Ancillina Bellardi 1882
Ancillopsis Conrad
Ancillus Montfort 1810
Anolacia Gray 1857
Baryspira Fischer 1883
Chiloptygma H. & A. Adams 1853
Cymbancilla P. Fischer 1881
Dipsacus Klein
Eburna Lamarck 1801
Monoptygma Lea
Pinguispira Finlay 1927
Sandella Gray 1857
Sparella Gray 1857
Sparellina P. Fischer 1883
Turbancilla v. Martens 1903

Oliva paxillus Reeve 1850 Conch.Icon.,pl.21,species 56,a,b
Reeve describes the species as follows, " The Peg Olive- Shell oblong-conical,thick,stout,rather fusiform,spire largely exserted, columellar plaits few in number; ivory white,obscurely marked with light brown, with scattered spots of chestnut network beneath the sutures. Hab.-? " End Reeve quote.

Tryon,Man.Conch.,vol.5,p.85,pl.32,figs.21-23, describes the species, " Shell thick,stout,cone shaped,with a high spire;white,with triangular brown markings,forming interrupted bands, and spots beneath the sutures and on the fasciole; interior of aperture sometimes two or three banded. Length .85-1.1 inches. Japan,Philippines, Australia. The form of this species is its best characteristic. O. ozodona Duclos (fig.22), and O. nitidula Duclos, not Gmelin, (fig.23) are to be united with it." End Tryon quote.

We are not accepting Tryon's assignment of O. ozodona Duclos. Otherwise we concur.

Weinkauff,H.C.,Catalog der Gattung Oliva Brug.,Jahrb.Deutsch. Malak,1878, listed the species as follows, " Oliva paxillus Reeve
56,a,b;Marrat.89; Wk. 22,6,9- var.ozodona Ducl. 11,3,4;Marr.90,91,94
nitidula Ducl. 11,3,4;(non Gmelin);Marr.90,91
Japan,Philippinen,Neuholland."

In the cource of our study of the species of Oliva we were confused by the fact that several lots in our collection were obviously closely related. This complex includes among others,Oliva paxillus Reeve 1850,Oliva duclosi Reeve 1850,Oliva sandwichiensis Pease 1860, and Oliva thomasi Crosse 1861.

We are accepting the opinion of the late J.R. Le B . Tomlin as published in Nautilus,vol.48(2),p.70,1934. Tomlin was a very careful observer and had studied the types of all of the species involved in this group. Tomlin's paper was titled " Note on Omogymna Martens" Omogymna was duly characterized by von Martens in 1897 (Arch. f. N aturg.,Band 1,Heft 2,157) as a subgenus of Oliva with O. paxillus Reeve as type. We quote Tomlin as follows," Tryon (Man.Conch. vol. v:85) points out that O. nitidula Duclos is the same as O.paxillus Reeve,but is preoccupied by nitidula Dillwyn (not " Gmelin"). O. ozodona Duclos, which Tryon also includes in the synonymy, is certainly not paxillus. On the other hand, O. sandwichiensis Pease (Pr.Zool.Soc.Lon.,1860,p.145) and O. thomasi Crosse (Jour. de Conch. 9:173,pl.6,f.3,4,1861) are both the same as paxillus Reeve. The types of all three are in the British Museum. O. paxillus Reeve seems to be a widely distributed, but not very common Indo-Pacific species. In addition to the published localities, I have recently seen it from Cocos and from Christmas Islands,both in the Indian Ocean." End Tomlin quote.

CORRECTION

Correction of our opinion stated in Minutes 182,p.17-
We are now placing the species discussed as Oliva sandwichiensis Pease 1860 in the synonymy of Oliva paxillus Reeve 1850
We are retaining Oliva duclosi Reeve,1850 as another and separable species as stated in Minutes 182,p.16.

We are also considering Oliva thomasi Crosse 1861 = O. paxillus Reeve However, inasmuch as this is another more or less contraversial matter, a brief discussion of O. thomasi should be in order.

Oliva thomasi Crosse 1861,Jour. de Conch.,9:173,pl.6,f.,3,4
Tryon,Man,Conch.,p.85,pl.32,fig.18,describes this species as follows," Heavy,oblong, with rather short spire;flesh-color,obscurely two-zoned,numerously punctate,maculated with chestnut at the (con.)

suture; yellowish-white,obscurely bifasciate within the aperture. Length 28 mill. ..Is possibly a variety of O.flammulata judging from the figures and description." End Tryon quote.

It seems to us to be quite impossible to compare this species with O. flammulata, which we consider a distinct West African species (See Min.182,p.24).

Dautzenberg discussed the species from Tahiti. Dautzenberg,Ph. and J.L.Bouge, Les Mollusques Testaces Marins Des Establissements Francais De L'Oceanie,Jour.Conchyl.,vol.77,1933. The authors mention that the typ is not in the Paris collection, and they have not studied the type. Nevertheless they mention Tryon's doubtful assignment to O. flammulata with " difficil a admittre, car l'O.flammulata." However, the authors did list O. thomasi as a species from Tahiti.

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Oliva fulgorator (Röding) 1798 Porphyria fulgorator Röding, Museum Boltenianum,p.36,1798

This species has been known for generations as Oliva fusiformis Lamarck,Ann. du Mus.,XVI,p.318,1810. Charles W. Johnson,Nautilus, vol.24,p.123 comments on the taxonomy as follows," Both Röding and Lamarck refer to the same figure by Martini (Conch.Cab.,ll,tab. 51,fig.562). Lamarck's first reference is to a similar figure in the Encyl.Meth.,plate 367,fig.7. The markings are coarser than in O. reticularis. Specimens are frequently obsoletely banded or overlaid with brown. O. bullata Marrat seems to be a narrow form of the species." End quote. Johnson places in the synonymy,Oliva ispida Link, Marrat,Thes.Conch.,IV,Oliva 12,figs.15,16; Oliva obesina Duclos, Monog.in Comp.Rendus,II,tab.16,figs.9-11,1835.

Reeve,Conch.Icon.,pl.8,species 11,figs.a,b,c. Reeve and almost all others described the species as O. fusiformis Lam. Reeve's comments follow," Shell fusiformly ovate,very thick,swollen posteriorly,spire rather large, exserted,posterior columellar plaits rather faint; white,longitudinally zig-zag streaked with reddish fawn, sometimes two banded,columella and interior of the aperture ivory white. Hab. West Indies. ..A very distinctive species of stout solid growth, belonging to the same type as O. reticularis and O. juliettae, in which the pattern is gathered along the spiral edge of the whorls into points of darker color." End quote.

Tryon,Man.Conch.,p.83,pl.30,figs.86-89;pl.34,fig.56,describes the species as follows," Shell thick, oval,swollen posteriorly, the spire prominent;white,with longitudinal zigzag chestnut figures, sometimes two banded,and sometimes the chestnut color nearly covers the shell by the coalescence of the markings; white within the aperture. Length ,1.5-2.25 inches. West Indies.

With this are to be united O. obesina Duclos,O. mercatoria Marr. (fig.56)-at least in part (one of the figures resembles O.reticularis more closely), O. bullata Marr.(fig.89) and O. reclusa Marr.,the last two not fully grown." End Tryon quote.

Distribution in the Burch collection: Nassau,Bahamas (Ex. Ford) are typical and match all figures; sets ex. W.F. Webb simply labelled,West Indies, are typical; set from the Bahamas ex.Gilbert Grau.

It is odd that several sets of this species have appeared in collections labelled as from the Philippines, obviously in error.

Weinkauff,1878 lists the species as follows," Oliva fusiformis Lam.,Ducl.17,12-16;36,15,16;Rv.11a-c;Marr.15,16(O. ispida) ; Wk.12,8-12. var. obesina Ducl. 17,9,11; Marr.17 ;aldinia Ducl.26, 6,7;oniska Ducl. 32,7-9;mercatoria Marr.268,269;bullata Marr.448. Florida,Antillen,Central-America,Venezuela. "

PUBLICATIONS RECEIVED

Morphogenesis- The Analysis of Molluscan Development by Chr. P. Raven, Professor of Zoology in the University of Utrecht.

This is a scholarly book dealing with the present state of our knowledge on development in the mollusk, both descriptive and experimental. It is mainly centered on the casal analysis of morphogenesis. 311 pages, cloth bound, text figs. 1958 $10.00 Available from John Q. Burch

The Nautilus- Vol.72,No.2,Oct.,1958. The following papers are contained in this issue.

Drepanotrema paropseides (Planorbidae) by W. Lobato Paraense and Newton Deslandes.

Systematic Status of Hemphillia malonei by Eugene N. Kosloff and JoAnn Vance.

Urosalpinx cinera and Eupleura caudata in Chesapeake Bay, Maryland by J. Frances Allen

Extensions of Known Ranges of 4 Mollusks by Dee Saunders Dundee and Harold A.Dundee.

The spread of the fresh water gastropod, Corbicula fluminea (Muller) into Arizona is discussed. The very rapid spread of this species throughout the irrigation systems is amazing, and the fact that it has become a pest is a matter of some concern.The other species discussed are Arion circumscriptus Johnson,Euglandina rosea (Ferussac), and Sonorella coltoniana Pilsbry.

Introduction of Marisa into Florida by Burton P. Hunt.

The Canary Island Haliotid by Robert R. Talmadge. The author has given a very thorough discussion of the variation in Haliotis (Sanhaliotis) coccinea Reeve.

Mollusks of Lebanon Co.,Pennsylvania by Robert A. Heilman and Gordon K. MacMillan.

Quickella vermeta and Succinea indiana by Leslie Hubricht

Marines from Manus,Admiralty Islands by Alan Solem

This is a well prepared faunal list.

Under Notes and News , Dr. Wm. J. Clench discusses a nice point of systematics. Fulgoraria kaneko Hirase 1922 was figured without description by Hirase in his " Illustrations of a Thousand Shells". Kuroda and Habe redescribed the same species under the same name in " Ill.Cat.Japanese Shells" 1950. The conclusion is that the original figure with name and no description by Hirase is valid. Another nice point is the status of the neotype selected by Kuroda and Habe on the basis that the holotype of Hirase had been lost during the war, but paratypes from Hirase exist both in the Museum of Comparative Zoology and in the U.S. National Museum. Clench states that the paratype in the Mus.Comp.Zool. becomes a neoholotype with type locality,Korea Strait ,Japan.

Late Pleistocene Megafauna of Cayucos, California and its Zoogeographic Significance by James W. Valentine. Journal of Paleontology,v.38,no. 4,July,1958.

The author discusses a very interesting division of the fauna of California during the late Pleistocene, north and south of the Santa Monica Mountains. The paper is well prepared with extensive lists of species, discussion, and literature cited.

A New Species of Ptychotrema Mörch (Mollusca) from Tanganyika Together With A Check-List of the East African Species and Keys for Their Determination by B . Verdcourt. Journ.Linnean Soc. Lon.,June,1958

The following verse was clipped from some periodical, and I regret that I failed to note the source. It might apply to us at times.

" The technical literature searcher
Delves deep into journals and books.
But unless he is wise
His work testifies
To the references he overlooks.

Oh techmical literature worker
Adrift on a deep sea of lore,
Take heed while you may
And go not astray,
For whatever you find,there is more!" J.Q.B.

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THE ROARING CONCHOPHILIC

There is some disagreement about what makes alcoholics.The WCTU consistently maintains it is the first drink. Hemingway has observed its opening bottles does it. But there seems to be general agreement that the first acquisition of a beautiful rare shell may turn a mild conchophile into a roaring conchophilic.

The above is plagarized from a clever article by Richard Murphy merely substituting concho for biblio.

Webster's Unabridged seems to have no such words as the following to be found under biblio,but perhaps we are fortunate in not having such a horrifying list as;concholatristic- idolator of shells; conchophagic-devourer of shells;concholastic -destroyer, mutilator of shells;concholeptic-stealer of shells; conchopolic-addicted to selling shells; conchotaphic-hider of shells, as in a tomb; conchophobic- hater of shells. J.Q.B.

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One of my pet peeves is a good friend and customer who enjoys picking up a rare book priced at $30 or more with the gleeful remark," I bought my copy of this work for about $2.50 when I was in London following World War 1".

Quoting Donald I.Rogers in N.Y. Herald-Trib. " There is no doubt the dollar has eroded. Anyone who laid out $1,000 for a bond in 1940 and redeemed it recently, for instance, wound up with the equivalent of $437 in purchasing power." J.Q.B.

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On the Lighter Side With a Shell Dealer- J.Q.B.

A good laugh may cheer up an otherwise dreary afternoon, and some sense of humor is a necessity unless one goes in for tranquilizers.

We recently received an order for quite a rare Murex,a snow white species, and sent a specimen as near perfection as one is likely to ever see.The shell had no blemishes of any kind, and the operculum was in place. The shell was indignantly returned with the note that the collector saved nothing but very bright colored shells. Some time ago a dealer in shellcraft material called to show his wares. Our naturally drab intertidal shells such as Tegula, Littorina etc.were painted in brilliant hues of blues and greens, some having bands of deep crimson. We resisted the temptation to buy but if I had the dealer's address I would send him the name of our customer mentioned above. I have no doubt that this dealer would be happy to supply shells in lavender or any other good cheerful shade,or perhaps even delight this collector by selling him a box of paints and brushes. This reminds me of the occasional note we used to receive from the late Walter Webb to the effect," Here is a customer for you if you want him. At my age I prefer to deal only with amiable people.".

Publications Received

Recent Cases of Human Injury Due to Venomous Marine Snails of the Genus *Conus* by Alan J. Kohn, Ph.D Hawaiian Medical Journal, July-Aug.,1958.

This is an interesting summary of this subject, and illustrated with photographic plates showing several species. The summary may be stated from the authors paper," 25 humans are known to have been stung as a result of handling cone shells- and 5 have died! *Conus geographicus* and *Conus textile* have caused all of the fatal cases. None of the 5 Hawaiian cases have been fatal.

Check List of Hawaiian *Conus* -Prepared by Alan J. Kohn.
We are pleased to have this carefully prepared systematic list.

Dr. Alan Kohn has returned from his extensive travels with great quantities of material for study. He is at this time teaching at the Florida State University,Tallahassee, Florida- Dept. of Biological Sciences. We are looking forward to the publication of his systematic report on the species of Hawaiian *Conus*.

Marine Mollusks from Bougainville and Florida,Solomon Islahds by Alan Solem, Fieldiana-Zoology,Chicago Natural History Museum, Vol.39,No.20 ,Oct.,1958. A well prepared systematic list of the species with discussion.

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Conus glans var. *tenuigranulata* Dautzenberg-Mozambique

This is the species I have distributed rather widely labelled *Conus violaceus* Reeve. I am very grateful to Mr. R. Wright Barker for calling my attention to this error in assignment. After checking further I am convinced that Mr. Barker is correct, and will simply quote a few lines from his personal communication to me.as follows: " I was very pleased with the Conus *abbas* ....,also with the "*Conus violaceus*"which I regard as *C.glans* var. *tenuigranulata* Dautzenberg (I have studied the type of *C.violaceus* Reeve in the British Museum and agree with Tomlin that this is a *C.luteus* Sowerby, different from the shell you sent in a number of ways); also pleased with the " *C.omaria*" from Mauritius, which I regard as definitely as near *C.pennaceus* as we could hope if we accept the figures of Born,Sowerby, Weinkauff, and others.".

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Cypraea (*Blasicrura*) *summersi* Schilder-
A letter from Ray Summers gives us the name and reference as follows, Arch.Moll.,B and 87,No.1,3 Seite 81-87,Frankfurt Am.Main.,15.7.1958.

I have not seen the paper, but hope to get a copy of the description in time.

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Personal letter from Robert R. Talmadge-a few excerpts-" In a recent letter from a contact in Australia, the Baler was mentioned.This party while on a collecting trip to the Barrier Reef took a perfect well colored specimen,18" long and 13" in diameter. That is an awful lot of shell and I can immagine the size of the animal.

It might be of some interest to the collectors in the southern part of the state, to know that I am now the proud custodian of a pair of the *Haliotis dissona* Iredale, with both shell and animal."

The fpllowing paper was given at the October,1958 meeting of the Conchological Club of Southern California.

DERIVATION OF NEW SPECIES OF MOLLUSCA

by Progessor Jens M. Ostergaard

Our problems in taxonomy of the Mollusca consist of determining the degree of relationship between individuals and between groups. This is not easy, for the many factors entering in are not well known. Usually the shell is our only source for determining relationship,while the anatomy of the mollusk might be of greater value.

The investigations of Allison Kay of the University of Hawaii give promise of a solution to some of our taxonomic problems,in that she has made dissections of the female reproductive system, and studied the radula of many Hawaiian species of *Cypraea* to be comparatively used.

It is not the relationship of the major groups I shall deal with hene,rather the beginning stages to species formation and their probable causes. Differences of less than specific importance are as follows: 1) Individual variations,2) Sexual differences,3) Ecological variations,4) Pathological differences,5) Racial differences

Individual Variations

In order to get an appreciation of individual variation, one should study a well populated colony. But how are we to know that the colony is not mixed ? one might ask. If the group of mollusks is concentrated in a small area and its individuals are of the same age-as their stage of development would indicate-we can reasonably conclude they are members of the same brood. As an example,I found during the month of July,1926,a colony of *Strombus gibberulus* L. at low tide close to shore on the north shore of the island of Tongatabu,Tonga,which consisted of about 50 adult individuals concentrated in an area with a radius of only about 20 feet.But for miles along the shore not another individual of the species was to be found,although conditions seemed to be identical in many places. The mollusks in this colony exhibited a wide range in variation from white to dark brown. Likewise, on the shore of Diamond Head, Oahu,Hawaiian Islands, in a corresponding small area I have on more than one occasion observed the presence of *Cypraea caputserpentis* in large numbers at the same stage of maturity.

Sexual Differences

In the dioecius species of mollusks, in which the sexes are separate,there might not be any obvious difference in the shell characters, but be restricted to anatomical parts only.

Ecological Variations

Ecological variations play a very important part in differentiation within the species of many mollusks,and they might often be misinterpreted as racial characters. As an example, while collecting on the north,or leeward,shore of the island of Tongabatu,Tonga, I observed differences, in size mainly,in two species of *Cypraea*-*errones* and *vitellus*- which occurred in large numbers about four miles apart under different reef conditions. Likewise, on Oahu, Hawaiian Islands,where *Cypraea caputserpentis* is so common, differences are readi;y observed in shell characters between those that live on open beaches exposed to the surf,and those that live in sheltered bays.

Pathological Differences

In the so called pathological variations we come to the most striking example of difference occurring within the species. Many such pathological forms have received specific names by conchologists, to which, of course, they are not entitled. It is assumed that a diseased condition is responsible. In many species of *Cypraea* the

change effected involves the shell to such an extent that color as well as form is changed. Some assume a rostrate form; in others the color only is affected; but commonly the form as well as coloring is changed. Its occurence is largely restricted to certain geographical areas. A region including New Caledonia and extending to the coast of Queensland,Australia,shows the greatest number of species so affected. Ray Summers showed me a series of pathological shells of *Cypraea macula* Angas from Queensland ranging from the normalto a *highly rostrate* form,so different from the normal that it cpuld so easily be mistaken for a different species were the facts not known. He showed me also two abnormally colored specimens of *Cypraea caputdraconis* Melvill from Easter Island on which a broad *bright red band extended* from the base and over part of the dorsal surface. In this case the shell is affected only in coloration. In a colony of *Cypraea caputserpentis* at Coconut I.,Kaneohe Bay,Oahu, specimens of *an entirely pale color* intergraded with those of normal coloration.

Racial Differences

Coming to the last in our category of groups-racial differences- we are closest to the species,for the bridge here may easily be crossed; and many are the uncertainties in the mind of the taxonomist as to their true rank-racial or specific. When such differences in some characters of a species of mollusks are restricted to a certain geographical area,we speak of them as " Geographical races" or " Subspecies" ,as some prefer to call them. They differ from ecological variations in that their characters are of a hereditary nature, like those of the species. Yet, they differ in a l lesser degree from the species to which they belong than two species do from each other. These geographical races or subspecies are either known or assumed to connect up with the species by an intermediate link. Now, should such an intermediate link be eliminated, the result would be a new species!We may then consider them as potential species and assume that a great many new species are on their way. That is not so;for most of them come to naught in various ways.

The Species

A species of mollusk may be defined as follows: a group of similar individuals which differ in one or more basic characters from the individuals of any other group,and which rarely intercross with any other group,though they might be closely related. The essential factors in species formation among the mollusks seem to be environment and isolation. Another factor may be mutation,by which a new species may come into being.

Environment and Isolation

In the Red Sea we can count 5 species of *Cypraea* whose closest allies occur in the Indian and in the *Pacific Ocean*. These are with their progenitors: *camelopardalis Perny* from *vitellus Linnaeus*, *pantherina* Solander from *tigris Linnaeus*,*pulchra Gray from isabella Linnaeus*,*exusta* Sowerby from *talpa Linnaeus*,*nebritis* Melvill *from erosa Linnaeus*. The Red Sea *is a* long and comparatively narrow *body* of water with the hot Arabian desert on one side and the Sahara on the other,causing the waters to reach a high temperature that would serve as a climatic barrier and thus produce a condition of isolation. Similarly South Africa with its temperate climate has its own molluscan fauna in which we find species of *Cypraea* of peculiar forms. South Australia shows also its own species occurring nowhere else, as here, too,the climatic barrier serves as isolation together with other environmental peculiarities.In the Atlantic,Northwest Africa with its geographical isolation has i its own types. Hawaii with its vast expanse of ocean serving aa a

barrier,presents us with many species and subspecies of mollusks. Hese the land snails,Achatinellidae, have probably contributed more to isolation as a factor respondible for the evolution of new species. The late John Thomas Gullick made the observation that species of Achatinella occurring in adjoining valleys on the island of Oahu, and found at the same altitude and apparently under the same conditions, indicated a less close relationship to each other than they showed to those of the same valley that lived at a higher altitude and under different conditions. Dr. Gulick had an interview with Charles Darwin, the author of the " Origin of Species", in the 80's, and presented his findings to him.Darwin's reply to John Gulick was: " Write,write!". This he did,for he made his findings to the world in the early part of this century in his volume,"Evolution,Racial and Habitudinal." This contribution to science made him rank,in the opinion of some authorities, as the greatest living Evolutionist of his day.In considering the causes leading to the formation of new species of mollusks derived from older ones,the endemic or partly endemic species of the Red Sea may be taken as an example. From its starting point (center of origin) a species spreads out in an ever increasing radius till it encounters barriers,which may be climatic,geographical or environmental. At the periphery of its distribution an adaptation to adverse conditions becomes a requirement for its survivalwith the results that " Natural Selection" acts as a factor in preserving new characters resultant from its adaptation,while members of its own original stock are prevented from intercorssing with the so adapted new form and neutralizing the new characters acquired.Thus isolation contributes to species formation.It is not the opinion of many authorities that ecological or,as we may call them,environmental characters are hereditary,but some believe that they may become so after several generations. It appears there are many requirements for the successful establishment of a new species and that many species are unsuccessful and survive for short periods only. On the other hand, some show great racial longevity. The Dutch geologist, Dr. C. Beets, reports finding Cypraea vitellus in the Upper Miocene of East Borneo, 11 million years old, while others report it considerably earlier from Java.

Mutation

The factors of mutation in species formation appear to be rather elusive,for the changes are radical and abrupt. They are problems of genetics. An accident to the chromosomes causes a disarrangement of the hereditary genes. In 1918 I located the fossil shell of a small species of Strombus in a limestone quarry at Wailupe, near H onolulu,which I could not identify. The limestone is late Pleistocene and appears at many places along the shores of the island of Oahu. Later I found several more specimens in various places of the same limestone. In a ditch that was dug for gas pipes at Kailua,windward Oahu,I gathered several specimens from the limestone exposed at an altitude of about 30 feet above sea level. Among these specimens there were some that showed strong intermediate characters between the common Strombus maculatus Sowerby. This fact convinced me that my fossil Strombus had been derived from Strombus maculatus. These fossils had no colors, but others dredged from Honolulu Harbor showed traces of a color pattern and indicated to have lived at a more recent time,although none were found living. I sent specimens of this Strombus to the late Henry Pilsbry,who honored me by naming it for me. Recently I received a fresh specimen of it from Okinawa,which led me to believe that in its larval stage it had been carried from Hawaii by the Japanese current. In 1905, from a dredging of Honolulu Harbor, a new Cypraea turned up-

one single specimen the size of a small helvola.Later several more came to light. In 1920,when I had 5 specimens I described it and named it Cypraea pacifica. But shortly thereafter the late Dr. Wm. Dall observed that the specific name I used was preoccupied by a Trivia ,which had been included taxonomically with the Cypraea, and renamed it ostergaardi.Conchologists who had not seen the shell presumed it to be a faded subfossil of Cypraea helvola , of which so many were dredged from Honolulu harbor. That it is related more closely to helvola than to any other species seems certain,yet entirely distinct. The largest number of specimens brought to light have come from Midway Island. None, it appears,have been found alive. I believe this species to be a mutant of helvola.When in the Palau Islands, the late Dan Langford found an unusual specimen of Cypraea in its living state, which he sent to Mr. Thaanum of Honolulu, who showed it to me. It was the size and form of helvola but white on the ventral side and black on the dorsal.Some time later Mr. Thaanum showed it to me again. It had faded a little,so that the helvola markings on the dorsal side became visible.Like the preceding species, this appeared to be a mutant of Cypraea helvola.

** A strange coincidence on the day I presented this paper was the discovery of a fresh shell of Strombus ostergaardi, after 40 years of knowing the species only in its fossil state in Hawaii. The shell was together with a lot of Strombus maculatus from the Island of Hawaii and owned by Mr. John Q. Burch.

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November was a busy month at the Burche's. Professor Jens M.Ostergaard spent more than a week at our home. Together we studied his two major families, Strombidae and Cypraeidae. In material from the island of Hawaii (Big Island) he identified from living material 3 specimens of Strombus ostergaardi Pilsbry. This species was named by Dr. Pilsbry some years ago from fossil material. J. Ostergaard reports these as the first living specimens taken in the Hawaiian Islands. Miss Ruth Coats joined us one week end and we had a delightful shell visit. The following day,Sunday, a few friends called to pay their respects to Professor Ostergaard. At the Nov. meeting of the Conchological Club of Southern California, our guest delivered an exceptional paper. We regret that his home is not nearer, but early (for me) one morning I took him to the station for his trip home.We are looking forward to his next visit.

While Clif and Daisy Weaver were in Southern California they stopped at the Beverly-Hilton. The Crawford Cates kept them busy. We were delighted to have them call twice and share with us Cliff's collecting experiences. We both have the urge to return to Hawaii.

In Octover, we had as a guest Colonel Wm. A. McCarty, a Cypraea collector, so again the Cypraeas were studied.

It is our custom,if there is time,to arrange an " at home" for out of town collectors so they can meet our local collectors. If you are planning to be in California, let me know.

Rose- Mrs. John Q. Burch

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The many friends of Mrs. E.P. Baker will be pleased to hear that after major surgery, she is said to be recovering nicely.

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Dr. Arthur D. Howard Has been in the hospital, but is now at home, and we hear that he is now doing well.

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Conchological Club of Southern California

The meeting of Octover 6,1958 was called to order by the president, Dr. Homer King, at 7:30 P.M. Approximately 35 members and guests were present.

In the absence of the program chairman, Dr. King asked Mrs. Burch to introduce the speakers. She presented first, Professor Jens M. Ostergaard of Palo Alto, California, whose topic was Derivation of New Species of Mollusca. Since this paper will be presented elsewhere in its entirety in these Minutes, it will not be reviewed here except to say that it was extremely well received, and a lively discussion followed regarding the Peleontological history of the Hawaiian Islands.

The second speaker of the evening was Mr. E?P. Baker of Downey, California, whose topic was the Seri Indians of Tiburon Island in the Gulf of California. Mr. Baker visited these Indians recently with a group from the Friend's Service Committee. His talk was very well illustrated with color slides, still photographs, shells, and Indian artifacts. It was good to see that these people are now being recognized as human beings, and are being educated and helped to gain a better way of life for themselves. Mr. Baker is always a popular speaker with the shell clubs.

Exhibits of the evening, in addition to Mr. Baker's Indian things included a new shell, Kellettia lischkei from Japan, with our West Coast Kellettia kellettii for comparison, brought in by Mrs. Burch. Mr. Cate, Display Chairman, brought in two extremely large Pecten subnodosus from the Pacific side of Baja California which seemed to be the largest anyone present had seen; the official exhibit of the evening was a tray of world wide Pteronotus, most of them uncommon or rare.

The business meeting was held after a short intermission to look at the exhibits. Mrs. Burch read the minutes of the previous meeting due to the absence of the secretary, Mrs. Faye Howard. As Hospitality Chairman, Mrs. Burch also announced three new members had joined during the evening.

The Treasurer, Mrs. Dorothy Brown, reported a present membership of 72, and a balance of $50.32 in the treasury.

New publications were reported as follows: Mr. John Q. Burch mentioned a work by Dr. Woodring, a Biographical Memoir of Wm.H . Dall and a new book on morphogenesis.

Mr. Cate read an article from the Los Angeles Times of this date regarding the possibility of future space travellers deriving their food supply from algae grown in the space ship. He also reported on the July-August Hawaii Medical Journal, sent to him by Dr. Tom Richert of Honolulu, containing two articles on poisonous cones, one of them by Dr. Alan Kohn and the other by Ralph Hinegartner.

It was announced that at the November meeting, the speakers would be Mr. John Fitch, whose topic would be Deep Water Shells from Santa Monica B ay, and Mr. Crawford Cate, who will speak on Shell Collecting in Hawaii.

The meeting was adjourned at 9:15 P.M.

Respectfully Submitted,
Jean Cate, Secretary-pro tem.

NEW PUBLICATIONS

Coastal and Submarine Morphology- by Andre Guilcher, Professor of Oceanography at the Sorbonne- translated by B.W. Sparks and the Rev R.H.W. Kneese- London, 1958- cloth 274 pages + numerous plates and tex figures, maps etc. Available from John Q. Burch $6.50

This is a scholarly work covering coastal and submarine geomorphology and the forces in action, shoreline movements, coastal features related to sea action, classification of coasts, and coastal evolution an, in an outline of submarine geomorphology, describes the continental margin and the deepsea floor.

The Ecology of Invasions by Plants and Animals- by Charles S. Elton 181pp, 14pp bibl. notes -illustrated with numerous plates and text figures- London 1958 cloth 181pp 14p bibl. notes.
May be had from John Q. Burch $5.25

Traces the impact of invasion by a foreign species of animal or plant upon the structure and dynamics of populations. The authors subjects include changes in the sea, plague carriers, new food-chains and conservation.

Marine Ecology by Hilary B. Moore- 504pp. 27pp bibl. illistrated with plates and text figures. 1958. From Burch $9.50

Covers physical, chemical and biological environmental factors, habitats, the sea bottom, and many types of marine organisms. With numerous illustrations and diagrams. The author is assistant director of the Marine Laboratort at the University of Miami.

The Cultured Pearl, Jewel of Japan by Norine C. Reece. 1958 attractively bound 107 pages of text and 37 plates, some in color. A well written treatise on the pearl oyster, its culture, anatomy, and life history. Now in stock from John Q. Burch $2.50

Journal of the Marine B iological Association of the United Kingdom, vol.37, no.3, 1958. This issue contains several scholarly papers that should be of interest to the specialists.

P.R. Walne- Growth of oysters (Ostrea edulis L.)
F. Culkin and J.P. Riley- The occurence of gallium in marine organisms.
James Mason.-The breeding of the scallop, Pecten maximus (L.) in Manx waters.
The price of the entire October issue is $9.50.

Behavior and Evolution- edited by Anne Row and George Gaylord Simpson- 565pp bibls. diags. 1958 Available at $10.00

This is a symposium summarizing and giving examples of a general theory of evolution, reviewing present knowledgeof structural and physiological mechanisms that initiate and mediate behavior, categorizing behavior, and discussing the place of behavior in the study of evolution. The symposium arose from a joint conference of the American Psychological Association and the Society for the Study of Evolution.

Dating the Past by Frederick Eberhard Zeuner- an introduction to geochronology. 4th ed. revised and enlarged -563pp (58pp bibl.) illustrated, maps, diagrams. In stock at Burche's $10.00

Ebb and Flow by Albert Defant. The Tides of the Earth- (tr. from the German) 1958 Available from Burch $4.00
A scientific inquiry into the physical properties and generating forces of tides.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

The meeting of Nov. 4,1958 was called to order by the president, Dr. Homer King. Minutes of the previous meeting were approved as read by the secretary.

Mr. Kanakoff announced that the annual Christmas party will be held in the Museum cafeteria on Dec.2,1958. In the absence of the program chairman, Mr. Altshuler, John Burch introduced the speakers of the evening.

First- Crawford and Jean Cate shabed their collection experiences in the Hawaiian Islands. Excerpts from letters written by Cliff Weaver of Honolulu exposed many of the ecological secrets of mollusks of those waters. It was to be noted that many shells that are common in other parts of the Pacific , are extremely rare in the Hawaiian chain of islands. Others are endemic to the area. Needless to say, the talk was illustrated by superby specimens from the Cate collection.

The second paper of the evening was by John Fitch. It was a report on the sampling program to test the effect of the dumping of sewage into Santa Monica Bay. This program is conducted by the Water Pollution Control Board. To the present time there have been 104 ten minute drags (using nets) at various depths. About 75 color slides were shown--mostly of shells that we do not see in the inter-tidal zone. Mr. Fitch also displayed some very large Pecten subnodosus Sby. taken from the entrance channel to Black Warrior Lagoon,B aja Calif. They were found in shallow depressions in from one to ten feet of water. After a short intermission the business of the meeting was conducted.

Nomenclature reports mentioned a new paper on the Marine Molluscan Fauna of Guadalupe Island, Mexico by E.P. Chace of the San Diego Museum of Natural History. This includes a list of the species found there with one new species described by Mr. Chace. Also included is a new species of Nassarius from San Felipe,Baja Calif. From the current Nautilus- an article on Haliotis by Bob Talmadge of Willow Creek, Calif. Mr. Fitch mentioned a paper in Fieldiana on Solomon Island material.

The Field Trip Committee called attention to the fact that minus tides would occur in good daylight hours from Dec. 7 to 14.

The Nominating Committee gave their recommendations for nomination of officers for 1959 as follows:-

President- Dr. Donald Shasky
Vice-President- Crawford Cate
Treasurer- Dr. Homer King
Secretary-John Fitch

John Q. Burch then moved that nominations be closed .The move was seconded by George Kanakoff.

After the treasurer admitted that there was money available, John Fitch moved that some of it be spent for refreshments for the Christmas party--seconded by Crawford Cate. Mr. Fitch was appointed to serve on the gift committee, and Rose Burch ,Dorothy Brown and George Kanakoff to take care of the refreshments.

Several guests indicated a desire to join the club.

Meeting was then adjourned in the usual manner.

Respectfully submitted by the secretary,
Faye B. Howard

FURTHER NOTES ON POLLUTION OF GREEN LAKE

By Walter J. Eyerdam

As a naturalist interested in our northwest biological forms of life I have especially noted and collected the molluscan fauna of Green Lake which I started in 1907 as a freshman in Lincoln High Sch School.Great changes have been made with the shores of the lake since that time. About thirty years ago I collected 17 species of molluscan shells in Green Lake and have found two additional introduced species since then. Last Saturday I decided to do a little collecting and research to decide the extent of the pollution in the lake. I also wished to decide whether the *Lymnaea* snails were infected with Schistosomiad liver flukes which have been found in the Willamette Valley. They are very destructive to sheep and various species in the Orient and Africa are highly destructive to human life. The swimming larvae after leaving the infected snail host infect the legs of people working in the rice paddies. They bore through the skin and enter the liver.

I started in the lake at the Green Lake station bathing beach and waded up to my knees bare legged clear around the lake.All along the shore except the north end there is putrid stench of sewage,rotting vegetation and small animals like snails ,mussels, crayfish and insects. Everything is covered with algae which is nature's attempt to neutralize the pollution. Such snails as *Lymnaea*,*Planorbis* and *Physa* have a high toleration for putrefaction of water plants but the degree of pollution is so highthat a great number of these snails, especially the *Planorbis* and *Lymnaea* have perished. Only those that live above the bottom on water lilly stems or under leaves survive well. I was surprised to find *Vivipara japonica* , the rice paddy snail, living in the stinking mud on the west shore around the water lilies and the numerous bits of broken shells proved it to be important food for the muskrats. This is the large aquarium snail that feeds on algae. It is not known to carry any disease and they are an important asset to the lake. I found but 7 species of mollusks in the lakeincluding the dead ones. I also found several species of leeches. The native species do not bother,but a small one that lives among the introduced Lotus water lilies are quite vicious and I picked dozens of them off of my legs. There is also a small semi-aquatic fly on the Lotus leaves that continually attack the legs.

Immediate steps should be taken to clean up the polluted shores of the lake and while the lake is low there should be some thorough collecting made by the zoological department of the University of Washington to classify all of the organisms in the laketo determine especially what new kinds of pests have been introduced.

As long as the wind blows from the north the bathing beach on the N.W. side is comparatively free from infection to bathers except those with thin or tender skins or otherwise allergic to easy infection. The whole lake shore is closed to bathing on account of pollution. Walter J. Eyerdam,7531 19th N.E.,Seattle 15,Wash.

*****

Mr. Eyerdam has enclosed several newspaper clippings from Seattle dealing with this problem. It seems that last winter the big trunk sewer that carries the excess waters of winter out of Green lake collapsed in quicksand and made a hole in the street 60 ft. deep and about a block long. It seems that a million and a half dollars will be needed to repair the damage.

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It is often stated that Man is the only animal who consistently fouls his own nest.

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News of shells and shell affairs should be mailed to the editor,
John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Phone Ax 3-5710-Home Ax 2-7965

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Sea Shells of Tropical West America-Marine Mollusks from Lower California to Colombia by A. Myra Keen has been completed. The large freight shipment of books arrived at the Burche's, and are now in the hands of delighted purchasers.

The color plates are superb and the scholarly treatise now makes it possible to classify and arrange collections from this province with assurance. There are keys throughout, a large bibliography, and, in fact, everything one may ask a book to be. 675 pages of text, excellent text figures of all species in addition to the amazingly fine color plates, offer a work that every collector of shells will find indispensible.

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Part 6," The Genus Trochus of the Class Gastropoda" of the fine series by Henry Dodge, " A Historical Review of the Mollusks of Linnaeus" has been received. Bull.Am.Mus.Nat. Hist.,Vol.116:Art. 2, pp. 157-223. $1.00
Available from John Q. Burch.

Oliva porphyria (Linnaeus) 1758 Systema Naturae,ed.10,p.729,no. 349,1758- Systema Naturae, ed.12,p.1187,no.398,1767. Locality:Not given in 1758; " in Brasilia" (1767). Voluta porphyria

The taxonomy of this species has been very thoroughly discussed by Henry Dodge,A Historical Review of the Mollusks of Linnaeus, Part 3, The Genera Bulla and Voluta of the Class Gastropoda,Bulletin of the American Museum of Natural History,vol.107,Art.1,pp.68-02, 1955.

Oliva porphyria (Linnaeus) 1758,(Voluta porphyria)is the type species of Oliva Bruguiere, by subsequent designation,Montfort, 1810, as O.panamensis seu porphyrius.

Bruguiere in 1789 (1789,1792),Index,p.xv) described the genus Oliva. He left no descriptions of any of its species, as volume 1 of the work cited, at the beginning of which the index was placed, covered only the genera as far as Conus,listed alphabetically according to their vernacular French names.

In Minutes No.49,p.16,June,1945, we accepted Genus Oliva Martyn 1786.Type (by subsequent designation,Dall,1905),Oliva corticata Martyn 1786 (= O. incrassata Sol-O.angulata Lam. However, the Opinion 456 of the International Commission of Zoological Nomen - -clature, officially placed Martyn(T.), The Universal Conchologist, on the list of Rejected and Invalid Works.

Tryon,Man.Conch.,vol.V,pl.18,fig.53,describes the species as follows," Flesh color,angularly marked with some large, and many small,crowded,deep chestnut lines; fasciole tinged with violet, with chestnut maculations;interior of aperture and columella yellowish flesh-color. Length 4 inches. Panama to Mazatlan. Sometimes, very faintly,broadly two or three banded with bluish ash." End Tryon quote.

Reeve,Conch.Icon,Oliva,pl.1,species 2,describes the species as follows," Shell cylindrically oblong,ventricose,very large,spire short,rather depressed,apex raised,columella swollen,densely plaited throughout,plaits a little obscure;violet flesh color,angularly reticulated throughout with burnt red lines, and obscurely two banded with large blotches of the same color,columella tinged at the base with violet. Hab.Panama (in sandy mud at low water) Cuming. This fine species, the largest of the genus, is remarkably distinct from any other. From the peculiarity of its marking it has been long known as the ' Camp Olive'. Regarding the shell in the position in which it would be if the animal were placed with its head to the left of the observer,the interstitial spaces of the net-work have the appearance of a dense encampment of various sized tents." End Reeve quote.

A few other references follow: Index Testalogicus, W. Wood,by Sylvanus Hanley,1856,p.99,no.29.; Catalogue of Shells Collected at Panama, C.B. Adams,1852, species 36, p.51(extensive list of references given); P.P. Carpenter, Rept.1856,p.174,234,238,268, 282,337,350; Carpenter Rept.,1863,p.538,542,562,625,666;Zetek's Panama Shells,List p.526;Zeit. Fur Mal.,1851,p.23;Proc.Acad.Nat. Sci.Phil.,vol.84,p.112.

Distribution: The Burch collection contains many sets from Panama, others from Mazatlan (off shore islands), La Paz, and recently a number of very fine specimens from the trawlers off Guaymas, Sonora,Mexico.

Herbert N. Lowe,Nautilus vol.46,p.75," Espiritu Santo Id.,lying just outside La Paz Bay- I took my first live Oliva porphyria L. hereunder about three inches of sand;and believe me it is some thrill to dig these beauties from the sand."

Oliva sayana Ravenel 1834 Catalogue of Recent Shells,p.19
It would seem that the first author to recognize the specific name sayana was Wm.G.Mazyck in Nautilus,vol.28,pp.139-140,1915. The diagnosis of Mazyck follows," Oliva litterata Lamarck-In the February Nautilus Mr. Johnson substitutes Conrad's name Oliva carolinensis for O. circinata Marrat,which he had previously used for this well known shell,Lamarck's name having been preoccupied by Bolten,overlooking the fact that Dr. Edmund Ravenel had published the name Oliva sayana twenty-nine years before Conrad's description of Dactylina carolinensis/ The little shelf of books which I dignify with the title of " my library" furnishes the following facts: In 1834 Dr. Ravenel published a Catalogue of the Recent Shells in his Cabinet,on page 19 of which we find these entries: " O.litterata Lam.20 Ceylon-- O. sayana ,South Catolina--O.litterata Say. * These shells are certainly distinct, and therefore should be distinguished by different names. The O. sayana, sometimes exceeds 3 inches in length- fine specimens are rare-worn specimens not uncommon on the coast of South Carolina." In 1874 a second edition of this Catalogue was issued and on page 16,we read: " 512 O. litterata, (O. sayana Rav.) Sull.I.S.C.",a clear indication that he recognized the specific identity of the shells which he had formerly considered distinct. I find no furthur allusion to Ravenel's name until 1889 when Dr. Dall mentions it as a synonym of O.litterata Lam., in Blake Moll.,part 2,p.133. With these facts before us, it appears that the correct synonymy is
Oliva sayana Ravenel--Oliva litterata Lamarck,Ann.Mus/,xvi,p.315, 1810- Oliva litterata Say,Am.Conch.,pl.3,1830- Oliva sayana Ravenel,1834- Oliva cylindrica Sowerby,Quar.Jour.Geol.,vi,p.45,1849- Strephona literata Tuomey & Holmes,Pleioc.Foss.,S.C.,p.140,1857- Olivancillaria (Utriculina) literata H. & A. Adams,Gen.1,p.141, 1858- Dactylina carolinensis Conrad,Pro.Ac.Nat.Sci.,p.563,1862- Oliva circinata Marrat,Thes.Conch.,iv,p.21,1871- Oliva litterata (O. sayana Rav.) ,Ravenel,Cat.,p.16,1874." End Mazyck quote.

The efforts of others to establish a name for this species should be considered in a discussion of the taxonomy/
Charles W. Johnson,Nautilus 24,p.123,1911 writes," Oliva circinata Marrat 1871- O. litterata Lamarck,Ann.du Mus.,XVI,p.315,1810(non Röding 1798)-Oliva circinata Marrat,Sowerby's Thes.Conch.,IV,Oliva, p.21,pl.17,fig.277,1880. The study of a very large series before me shows conclusively that Marrat's circinata is really a form of Lamarck's litterata and will have to replace Lamarck's name,which is preoccupied. After describing the species, Marrat says: " The Brazilian representative of the West Indian O. litterata. It is more rounded and symmetrical and less oblique and the lip is not sp spread at the posterior end." The reference to both Brazil and West Indies is very doubtful. The locality is more likely the Gulf Coast of Florida as specimens from there agree with Marrat's figures. It is readily separated from nivosa by its different color,darker bands and fasciculations below the suture.Specimens from the east coast of Florida are usually longer and more cylindrical. A bright yellowish form on the Gulf coast might bear the name of citrina." End Quote- Charles W. Johnson again published a paper in Nautilus 28,p.114,1915 as follows," Oliva carolinensis (Conrad) -O.cylindrica Sowerby, Quart.Jour.Geol.,vi,p.45,1849 (pars) not cylindrica Borson 1820 = cylindrica Duclos,not cylindrica Marrat 1870.
O. litterata Lam.,Ann.du Mus.,xvi,p.315,1810 (not Röding 1798)-
Dactylus carolinensis Conrad,Proc.Acad.Nat.Sci.Phil.,xiv,p.563,1863.
O.circinata Marrat,Thes.Conch.,iv,p.21,pl.17,f.277,1871. (con.)

var.citrina Johnson,Nautilus 24,p.123,1911
" In substituting a name for O. litterata Lam. ,preoccupied,I used O. circinata Marrat, overlooking the fact that it had been previously described by Conrad as a fossil from the Miocene of North Carolina,the synonymy being given by Dr. Dall in his work on the Tertiary Fauna of Florida (Trans.Wagner Free Inst. Sci.vol.3,pt.1,p.44,1890). As Sowerby's name cannot be considered, I have adopted that given by Conrad. The Miocene and Pliocene forms cannot be separated from the Recent.The var.citrina is the bright yellow form occasionally found on the Gulf Coast of Florida." End Johnson quote.

Reeve,Conch.Icon.,pl.11,species 18,describes the species as follows,(Reeve used the name litterata Lam.) ," Shell elongated,spire exserted,columellar plaits sometimes rather concealed;light fawn color,partially tinged with yellow,ornamented with a rather large brown net-work,sharply triangular,disposed sp as to show two bands, marked here and there with chestnut characters,columella white,interior of the aperture deep violet.Hab. West Indies.... In form,it is peculiarly elongated,the network is of rather a large flame pattern,showing two bands,which are marked here and there with dark characters.The aperture is characterized by a deep tinge of violet." End Reeve quote.

Tryon,Man.Conch.,vol.V,p.83,pl.31,figs.5-7,describes the species as follows," Shell gradually attenuated at each end,with produced spire;over the usual zigzag markings ,reticulations and sutural fasciculations,are two bands of hieroglyphic characters,which are usually well marked. Length,1.5-2.5 inches. Beaufort,North Carolina to Florida;West Indies;Bahia,Brazil....The attenuation of the posterior part of the shell,distinguishes this from O. reticularis with which some of its varieties are nevertheless too closely allied; the same character and greater size distinguish it from O.scripta Lamarck,which has very similar painting. O.circinata Marr.(fig.6), is one of the connecting forms referred to above.O. multiplicata Reeve (fig.7), is probably also a synonym." End Tryon quote.

Weinkauff 1878, lists as follows (as O. litterata)," Duclos,11, 15,16;Rv.11,18;Marr.262,267;Wk.15,1-8. var.= circinata Marr.277, bewleyi Marr.44,polita Marr.80,81,Wk.14,1,2.Florida,Mexico,Central America,Venezuela,Brasilien." End quote.

R. Tucker Abbott in American Seashells comments as follows,p.245, pl,12a," Color grayish tan with numerous purplish brown and chocolate-brown ,tent like markings...Do not confuse with O.reticularis which is generally smaller,which has a much more shallow canal at the suture,whose apical worls are slightly convex instead of slightly concave, and whose sides of the whorls are more convex. Dead specimens buried for a long time in bay mud may take on an artificial black coloration. North Carolina to Florida and the Gulf States." End Abbott quote.

Perry and Schwengel,1955, note" A number of specimens of both types of Oliva have been found which have a strong revolving cord at or near the center of the body whorl. The cord is continuous from columella to edge of outer lip.. Pur albino specimens occur but are rare..Oliva sayana citrina Johnson -A golden yellow or pale-yellow form of O. sayana peculiar to the Gulf Coast of Florida." End quote. Maxwell Smith,East Coast Shells,p.131,pl.50,f.9;pl.44, f.6,12;pl.64,f.8,8a,comments on the species," Spire produced;usual zigzag markings and sutural ornamentations,also two bands of hieroglyphic-like markings.Length,50-62 mm. ..A wider shell than O. reticularis. It lives in large numbers at low tide mark upon the west Florida beaches but colonies are difficult to locate.North Carolina to Texas." End quote.

(con.)

Distribution: Carlos N.Gofferje,Arq.,Do Museu Paranaense ,1950, lists Oliva sayana sayana Ravenel from numerous localities in the state of Parana,Brazil,South America. A great many sets are included in the Burch collection of which some may be listed,Bonito Springs,Florida,ex.F.R. Kirtland,1936,large set, large specimens and typical; St.Josephs Island.Gulf of Mexico, an interesting small race; Charleston,South Carolina, Ex. W.J. Clench,1938; Lanipa Bay, Fla.,ex.F.Berman; St.Petersburg,Fla. ,ex.E.T. Garland,1939;Lake Worth,Fla.;Sarasota,Fla. ex.V.F. Saxton,1936 ;Tampa Bay,Fla; Dauphin Island,Gulf of Mex.,C.R. 3/52 C.Roberts;Sanibel,Fla. ex. R.Turner,1955; Cuba,ex.G.A.S. Barnacle 1951.

The following species is placed in the synonymy of Oliva sayana Rav. by Tryon and others. Nevertheless to be thorough it should be considered. Oliva multiplicata Reeve,1850,Conch.Icon,pl.20,species 52. Reeve's description follows," Shell oblong cylindrical,rather narrow,spire acuminated,columellar plaits fine and very numerous, aperture narrow;whitish,very minutely and delicately reticulated throughout with brown red,promiscously encircled round the middle with a few blotches and dots,with blotches of lines beneath the sutures. H ab.-? This species is also remarkably distinct,having the columellar plaits much finer and more numerous than in any hitherto known.The pattern consists of a delicate network of most elaborate fabric, very similar to that of the Conus gloria-maris." End Reeve quote.
Weinkauff,1878, considers it a good species, and lists the following references," Rv.52,a,b;Marr.95;Wk.28,1,4.".
We have not recognized this species.

The following species is questionable. Oliva polita Marrat,Thes. Conch.,p.10,t.6,f.80,81,1870/ Tryon,Man.Conch.,vol.5,p184,pl.32, fig.10,describes as follows," Yellowish, with white and chestnut maculations;pallid violaceus within the aperture.Length ,20 mill. West Indies. ..Weinkauff thinks that this is perhaps a young (O.litterata = O. sayana Rav.),but it appears to me to differ greatly from that species,both in form and markings. I have not seen specimens. It may be a variety of the next species.(O.flammulata).
Weinkauff,1878,places it in the synonymy of O. sayana Rav.
Another puzzle in the literature involves this species.Melvill and Standen, Shells from Lifu, Journ.Conch.,VIII,p.404 list the species. It is presumably confined to the West Indies.However, the authors state that their shells are nearly identical to those from the West Indies and they consider them identical.
We have not recognized this species, and offer no solution.

Oliva reticularis Lamarck 1811 Ann.Mus.H.N. (Paris) XVI (94) inter Jan.Mar.1811,314. fide Sherborn. (The date is usually given 1810).

We will attempt to assemble some of the literature regarding this species, but do not necessarily agree with the conclusions of the various authors.

Tryon, Man. Conch.,p.83,pl.30,figs.90-95;pl.31,figs.96-4;pl.34, fig.57. The diagnosis of Tryon follows," White,with pink or chestnut zigzag longitudinal markings,and fasciculations of the same color around the suture;sometimes there are faint bands,and occasionally the whole surface is more or less covered with chestnut; aperture white. Length,1.5-2.25 inches. Florida,West Indies. .. Among the synonyms may be cited O. ustulata Lam.(fig.92),O.tisiphona Duclos (figs.93,57), O. memnonia Duclos (fig.94),O.sowerbyi Marrat (fig.96),O.bewleyi Marrat (fig.97),O.jamaicensis Marrat(fig. 98); O. hepatica Marrat (not Lam.)= O. bifasciata Weinkauff(fig.99), O. formosa Marrat(fig.100),O.nivosa Marrat(fig.1). The white variety of the last is equivalent to O. olorinella Duclos (fig.2) which Weinkauff has erroneously made a synonym of O. ispidula Linn. O. brunnea Marrat (fig.3) is said to come from Borneo, but I have before me undoubted West Indian specimens precisely like it; O. oriola Duclos(fig.4) is nearly equivalent to the last." End Tryon quote.

Reeve,Conch.Icon.,pl.10,species 16, has confused and combined this species with the forms of the Pacific.

R. Tucker Abbott, American Seashells,p.245,pl.12c,comments as follows," Southeast Florida and the West Indies,1 1/2 to 1/3/4 inches in length,similar to sayana ,but smaller,more globose,with an oily finish and generally lighter colored.." End quote.

Maxwell Smith, East Coast Shells,p.131,pl.51,fig.181;pl.50,fig.23, describes the species as follows," A slender shell which is swollen a little in the middle; spire somewhat raised;ridges on columella many and strong. Upon the whitish ground color there are faint purplish brown reticulations,often as white triangular spots. A variety has two darker bands near the middle of the final whorl and groups of brownish lines near the suture. Length 35-50 mm. Zigzag longitudinal markings of pink and brown are characteristic; fasciculations (pointed markings) of the same color around the suture. Some specimens are almost uniformly covered with chestnut brown. The aperture is white.Length 35-58 mm. Noø specimens have been taken alive north of the Florida Keys. Florida Keys and West Indies." End Smith quote.

Charles W. Johnson,Nautilus 24,p.123,1911 states," Oliva reticularis Lamarck- This is almost as variable in color as its Pacific analogue,O.spicata ,but the tendency to become more or less angulate as in that species is not apparent. The typical reticularis is the smaller form reticulated with pink or purplish lines,common throughout the West Indies. Large cylindrical forms from the Bahamas are figured by Marrat as nivosa .These resemble very closely specimens of ' circinata Marrat' (O. sayana) from the Gulf Coast of Florida. The O. pallida Marrat probably represents an immaculate form of nivosa, and quersolina Duclos, as figured by Marrat, the albinistic form of the typical reticularis/ Specimens of nivosa banded and streaked with an outer layer of brown are the formosa Marrat (non Lam.) + bifasciata Kuster." End Johnson quote.

Charles W. Johnson, Nautilus 28,p.114,1915 published an outline of the species with his conception of the proper synonymy, as follows.

Charles W. Johnson con.

" Oliva reticularis Lamarck 1810 Ann du Mus.,xvi,314,1810
O. tisophana Ducl., in Chenu's Ill.Conch.,ii,pl.17,f.17,18
O.memnonia Ducl., in Chenu's Ill/Conch,ii,pl.17,f.19,20
O. olivaceus (Meuschen) Marr. Thes.Conch.iv,pl.4,f.46.47,51-53
O. sowerbyi Marr. Thes.Conch. iv,pl.f.114,115
O. reclusa Marr. Thes.Conch.,iv,pl.17,f.264
O. mercatoria Marr. Thes.Conch.iv,pl.17,f.269

var.nivosa Marr. Thes.Conch.,iv,pl.17,f.276
var. bifasciata Küster ,Conch.Cab.,Weinkauff,Oliva,p.38,tab.10,f.8,9
O.hepatica Marrat (not Lamarck),Thes.Conch.iv,pl.3,f.27,28
O. formosa Marrat,Thes.Conch.,iv,pl.3,f.28,30

var.olorinella Duclos, in Chenu's Ill.Conch.,ii,pl.7,f.15,16
O.quersolina Duclos, in Chenu's Ill.Conch.,ii,pl.11,f.7,8
O.pallida Marrat (not Swainson),Thes.Conch.,pl.25,f.472

Although not as variable as its Pacific analogue, O. spicata,from the West Coast of Mexico and Central America,there are several well marked variations and some confusion owing to many of the older authors uniting some forms of the two species. Var.nivosa is the large cylindrical form;when banded with brown it is bifasciata. The white form is olorinella.O.pallida Marrat may possibly represent the albino form of another species." End Johnson quote.

Weinkauff,1878, recognized approximately identical synonymy for O. reticularis , but admitted Oliva bifasciata Kuster,5,11;Ducl.10, 9,11 as a valid species with a synonymy of O.reticularis pars. Marr.,27,28;O.hepatica non Lam.,Wk.10,8,9;O. formosa Marr.79,30; Brasilien und Guiana."
Charles W. Johnson recognized bifasciata as a variety.Tryon placed it in synonymy.

E.G. Vanatta ,Nautilus,vol.29,p.70,1915, published the following.
Oliva reticularis Lamarck,Tryon,M.C.pl.30,f.90,91,94,95;pl.34,f.57
var.formosa Marrat,the small brown form. Tryon,M.C.pl.31,f.100
var.nivosa Tryon,Marr. Tryon,M.C.pl.31,f.1
var.bifasciata Küster. The large brown form.Tryon,M.C.,pl.31,f.99
var.olorinella Duclos,Tryon,M.C.,pl.31,f.2
var.tisiphona Duclos. This is the globose,grayish form of Northern S.America.Tryon,M.C.pl.30,f.93" End Vanatta quote.

Oliva reticularis greenwayae Clench 1937 Pro. New England Zool. Club,vol.16,pp.17-26,pl.1.
Specimens tentatively assigned to this varietal name in the Burch collection came from Veradero Beach,Cuba ex. Ted Dranga. They were so labelled by Dranga . This form must be very close indeed to specimens labelled O. bifasciata by older authors. The distinguishing characters seem to be identical,but we have seen too few of the shells to hazard an opinion.

Oliva reticularis bollingi Clench 1934 Nautilus,vol.47,pp.142-143, pl.7,figs.3,4. The holotype and one paratype were taken in crab traps off Miami, Florida in about 200 feet of water. The detailed description of the author will not be quoted, but the following remarks by the author follow," This new subspecies differs quite noticeably from the typical form. It is a much larger and proportionately heavier shell,the color markings are stronger, and the ground color is not as white or creamy. It is named for Mr. (con.)

R.C.Bolling, one of my two companions on a recent Florida expedition. This new variety superficially resembles O. nivosa Marrat (in Sowerby,Thesarus Conchyliorum,4,Oliva,p.22,pl.17,fig.276) but differs from that species in having a much wider aperture at the base,not possessing a tubercle on the upper parietal area of the aperture and having a more conic spire." End Clench quote.

Oliva reticularis pattersoni Clench 1945 Mollusca,vol.1,no.4,p.49, 2 figs. on cover. Inasmuch as the periodical in which this description appeared had a short life, abandoned publication, and copies are not to be seem in many libraries, we repeat the description.
" A new subspecies of Oliva reticularis Lamarck, from the Bahamas by William J. Clench. Oliva reticularis pattersoni, new subspecies, Description- Shell thick and heavy,polished and widest at the mid-area.Whorls 8 1/4. Ground color cream overlaid with chocolate brown which completely suffuses the body whorl. The mid-whorls have a deeply channeled sutute,which is margined below by a narrow,white band.Interior suffused with brownish other than at the base(holotype) or only along the inner margin (paratype). Spire somewhat extended and slightly concave. Suture defined by a relatively deep channel. Aperture long, narrow above and widening below. Outer lip thick. Length 62.5,width 28,aperture 5 x 51.5 mm. Holotype
Length 56,width 23.2,aperture 4.5 x 46 mm Paratype
Holotype.Museum Comparative Zoology,No.151166,5 mi.east of Crabbing Point,Grand Bahama Island,Bahamas,received from A.H.Patterson.
Paratype in the collection of A.H. Patterson.
This splendid subspecies was obtained on the south coast of Grand Bahama Island. This is the deep water side of the island that fronts on the Northwest Providence Channel.The two specimens occured in shallow water in sand behind a small rocky islet.
This new Oliva is readily distinguished from all other members of the reticularis complex by its nearly total solid brown coloration. There is no indication of the spirally arranged and small tent-like checks and the small axial color threads that margin the suture on both O. r. bollingi Cl. and O.r.greenwawae Cl. It would appear that two totally different types of coloration exist,the color checks and the solid brown or banded form. O. r.bollingi Cl.represents the deepwater and large form with only the tent and threadlike checks;O. r. greenwayae Cl. posseses the checks as well as two spiral bands of brown, one at the mid area and one at the base, while O. r.pattersoni has the brown coloration only." End quote.

Distribution :- A few of the sets in the Burch collection are, St. Kitts,West Indies ex. Mrs. North 1941; Nassau,Bahamas, ex.Paul D. Ford,1941; Cayman Island, B.W.I.; Rifle Range Beach,Porto Rico; Bermuda Ids.;Nixons Harbor,S. Bimini,Bahamas,Foster Huntington leg. 1941; Dollar Harbor,S. Cat Key,Bimini Islands,Bahamas and Alicetown,No.Bimini Id.,Bahamas- Foster-Huntington leg.1941; and numerous sets from the Florida keys. We recently looked over the stock of a dealer in commercial shell. He had several hundred pounds of this species imported from the West Indies. The variation was rather amazing and included many color forms as well as a surprising percentage of albinos.
Comment- It would seem that a description of all of the color variations of this species might be a problem in higher mathematics. However, the variation in form is not so pronounced.
The possible relationship of this species to the forms of the Caribaeen, Venezuela etc. will be considered in another paper.

Oliva peruviana Lamarck 1811 Ann.Mus.H.N.(Paris) XVI(94) inter. Jan.-Mar.,1811,317 (fide Sherborn)
Reeve,Conch.Icon.,pl.9,species 14, describes the species as follows, "The Peruvian Olive- Shell ovate,thick,gibbous,swollen posteriorly, sometimes annulated,spire rather short,columella plaited toward the base,smooth above;light purple or purplish white,longitudinally zigzag-marked or streak dotted with purple chestnut,sometimes unspotted ,sometimes entirely puple-chestnut,columella white,interior of the aperture tinged with purple. Lamarck,Anim.sand.vert.(Desh. Ed.) vol.x,p.617. Eadem var. Oliva senegalensis Lamarck. Hab.Coquimbo,and Bay of Callao,Peru (in sandy mud at depths varying from 4 to 7 fathoms) Cuming. ..The specimens selected for the illustrations of this species are particularly characteristic of its varities of painting,in which only two colors are employed. At.Fig.A the shell is purplish-white,unspotted,whilst that at Fig.c is of a uniform dark purple chestnut. At. Fig.b the chestnut appears in bold distant zigzag stripes upon a light purple ground,which state of the species was named O. senegalensis by Lamarck, from some erroneous information of its locality.Fig.d represents a variety with more of the chestnut coloring,broken up as it were into dots and short interrupted streaks; whilst in the shell represented at Fig.e the chestnut appears in very promiscous and still smaller dots,overcharged with a general tinge of the same color. ..The form of this species varies in being sometimes very tumid, and produced into a ring toward the spire as indicated at Fig.c." End Reeve quote.

Tryon,Man.Conch.,vol.v,p.74,pl.18,figs.55-58,describes the species as follows," Shell thick,gibbous,with sometimes a slightly angulated shoulder; flesh-color,covered with numerous chestnut spots, disposed to coalesce into close zigzag longitudinal markings,or into larger and more distant zigzags;sometimes the markings are entirely absent,in others the entire surface is more or less covered with chestnut. Lnegth 2 inches. Peru and Chile." End Tryon quote. Weinkauff,1878 lists," Ducl.16,9-16,Rv.9,14;Marr.5,61-65;Wk.25,1-6 var.= coniformis Phil. Abb.XIX,1,5-7." End quote.

Gigoux,Enrique Ernesto ,Boletin del Museo Nacional de Historia Natural,Chile,Tomo XVI,1937, " La Oliva peruviana Lamarck". The author lists and figures 60 variations in both color and form. He did not give them names. After checking this paper, it seems to be almost absurd to list and discuss the comparatively few described forms. All of them plus many others are included in the 60 of Gigoux. Nevertheless, we will list a few of them.

Charles W. Johnson,Nautilus vol.24,p.121,1911, comments as follows," This species varies greatly in color,but lacks the finely reticulated patterns of O. spicata. The typical form is spotted; those with irregular longitudinal streaks are the fulgurata Martens (non. Ads. & Reeve). The light colored specimens might be called livida, and the dark chestnut colored form castanea Ford MS." End Johnson quote.

E.G. Vanatta,Nautilus,vol.29,1915,lists the species as follows, " The typical form is illustrated in Reeve's Conch.Icon.,vol.vi,pl. 9,f.14d;Tryon's Man.Conch.,vol.v,pl.18,f.58

var.fulgurata Mart., Rve.Conch.Icon.,pl.9,f.14b;Tryon.M.C.,pl.18,f. 56.

var.livida Johnson The types are pale lilac with ivory-yellow streaks. A.N.S.P. Coll. No.111726.Alt.40,diam.20 mm.Hab.unknown.

var.castanea "Ford" Johnson. Nautilus vol.24,p.122;Tryon,M.C. pl.18,f.55; Rve.C.I. pl.9,f.14a. The types are in the A.N.S.P. No. 111603 from Peru.Alt.43.5,diam.22 mm.

(con.)

(O. peruviana Lamarck-con.)
var subcastanea Vanatta 1915 " This form is brown with zigzag darker brown lines. It is similar to castanea in colorbut with streaks somewhat like fulgurata. Alt.41.5,diam.21.5 mm. The types are A.N.S.P. Collection,No. 111688 from Peru. This seems to be the form figured by Reeve,C.I.,pl.9,f.14e". End Vanatta quote.

Dr.H.R. Hill,Nautilus vol.68,pp68-69,1954 , discussed the species as follows," Oliva peruviana Lamarck is restricted to the west coasts of Chile and Peru. Five varieties have been described.

a. livida Johnson is creamy white in color.
b. subcastahea Vanatta is light brown.
c. castanea Johnson is dark brown.
d. fulgurata Martensis streaked longitudinally with lightning-like brown stripes on a cream-colored background.
e. coniformis Philippi has a reduced spire,with swollen body whorl and angles shoulder.

The typical O. peruviana is covered with brown spots on a light background." End Hill quote.

Distribution in the Burch collection: large numbers of specimens from Santiago,Chile, which seem to include all of the described varietal forms as well as many others; set of 10 specimens from Sechura Bay,Peru that fit all descriptions of the typical; set from San Nicolas Bay,Peru, J. Bravo leg., selected to illustrate the var. castanea Johnson;set from Punta Parinas,Peru,J. Bravo leg. selected to illustrate the var. subcastanea Vanatta; set from San Nicolas Bay, Pery, J. Bravo leg. selected to illustrate the var. fulgurata von Martens; set from San Juan Bay,Peru, J.Bravo leg. to illustrate the var. coniformis Philippi. Comments: The last set mentioned, var. coniformis Philippi with the remarkable square shoulders might induce the novice to recognize them as a separate biological entity if viewed in the absence of obvious intergrades. The one disposed to split the species might also find a complication in this set when confronted with specimens definitely of the form of coniformis,but of the color form of castanea. From all of the descriptions these shells could be placed in either lot. We are disposed to place all varietal names in the synonymy of the typical.

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Oliva splendidula G.B. Sowerby I 1825 Catalogue of Shells of.. *Earl of Tankerville*,App.,p.xxxii, p.87,NO. 2330

Reeve,Conch.Icon.,pl.11,species 17,a,b, describes the species as follows," The Splendid Olive- Shell cylindrically oblong,spire rather short,apex raised,columellar plaits rather distant;ash white, encircled with two bands.composed of triangular reticulated brown spots,one above the middle,the other basal,interstices between the bands sprinkled with black brown spots and blotches,base and apex purple violet,interior of the aperture yellowish white. Hab. Island of Tobago, B ay of Panama (in muddy sand at low tide) Cuming. This fine species belongs to the same group as the preceding, *O. reticularis*. It is distinguished by a peculiarity of marking,which is constant in all specimens,consisting of two broad brown bands, of which the interstices are sprinkled with curved linear dots and triangular blotches. The spire is short and rounded,with the apex raised,which,together with the base of the columella,is tinged with purple violet." End Reeve quote.

Tryon,Man.Conch.,vol.V,p.74,pl.18,fig.54,describes the species as follows," Flesh color with two broad,interrupted brown bands composed of triangular markings and reticulations,the intermediate surface covered with fainter maculations and spots;base tinged with violet,interior yellowish flesh color.Length 2 inches. Panama." End Tryon quote.

Maxwell Smith, Panamic Marine Shells,1944, p.35, fig.425, lists the species from Pearl Islands,Panama Bay.

Zetek's Panama Shells,p.526 lists the species.

P.P. Carpenter,Report,1856,pp.188,234,235,283,297,339,351,352

Proc.U.S. Natl. Mus. vol.17,p.175

A.M. Strong, Minutes 49,p.16,1945, in his list and Key to Species of *Oliva* on the West Coast,gave the range Gulf of California to *Panama.* However, we have seen no authentic specimens from the Gulf.

Charles W. Johnson,Nautilus,vol.24,p.121,1911,states," The occidental species of the genus *Oliva* ,from shell characters alone,seem to divide into two groups,the *one* containing the larger and beautiful *O. porphyria* Linne' and the smaller *splendidula* Sowerby,found only *on the Pacific* side from Panama to *Mazatlan.The other*,a group of analagous species, is represented on the Pacific side by *O. spicata* (Röding),*peruviana* Lam.,*incrassata* Sol.,and *julieta Ducl.,* and *on* the *Atlantic side* by *O. reticularis* Lamarck,*circinata* Marr., and *fulgorator* (Röding). *It is as* difficult *to* clearly define *the species* on this coast as the other, and specimens of *O. spicata and reticularis* often very closely resemble each *other,thus indicating a common* origin." End Johnson quote.

Distribution: All sets in the Burch collection are from Panama. The largest series is labelled, San Jose Rock,Dredged in 20 fathoms, Pedro Gomez,Perlas Islands,Panama.

Comment- This species seems to be very distinct, easily identified, and shows very little variation.

Oliva trujilloi Clench 1938 Nautilus,vol.51,pp.109-113,pl.9,figs. 3-5. The description and comment of the author follows," Shell solid, rather heavy,polished,with the greatest width just above the mid region. Ground color somewhat grayish, to reddish -brown,overlaid with fine and numerous reddish brown checks,intensified above and below the mid area to to indicate two somewhat obscure bands. The general appearance of the shell is a decided reddish brown,a few specimens only retaining a grayish cast. Whorls 7 to 7 1/2.Spire short,descending slightly to the sixth whorl,the last whorl being formed along the margin of the preceding whorl.Parietal wall thinly glazed with fairly strong basal plications.Mid-parietal plications fairly strong,short and developed to near the superior portion of the aperture. Aperture long and narrow,flaring slightly at the base. Palatal lip thick.Sculpture of only exceedingly fine growth lines. Suture deeply channeled. Interior of the aperture a flat white.

Length	40.2	Width	16.3	Aperture	36.8 x 2.8 mm.	Holotype
"	40.4	"	16.9	"	35.5 x 3.0 mm.	Paratype
"	37.6	"	17.0	"	33.9 x 2.8 mm.	"
"	35.1	"	15.0	"	30.0 x 2.0 mm.	"

Holotype,- Mus.Comp.Zool. no.57240,Puerto Plata,Santo Domingo. Clench,Russell,McLean and Hurst,collectors,July,1937.Dredged at about 5 fathoms. Many paratypes from the same locality.Additional records from Ponce,Puerto Rico, and Bay of Santiago,Cuba.

Remarks.- This species appears to be rather distinctive and rather remarkable because of its peculiar color,a color rarely equalled or approximated in this variable family. Morphologically, it appears to be nearest to O.sayana (O. litterata auct.,non Lamarck) but differs in color,much smaller size, the deeply channeled suture and the reduced spire.

The only species with which it can at all be confused is O.carib-aeensis Dall,originally described from Mayaguez Harbor,Puerto Rico. It differs from this species in its reddish brown coloration,the development of the last whorl,which in O. caribaeensis is descending,and in lacking the purplish coloration within the aperture which is described for this latter species. The proportions of the shell are slightly different,this new form being somewhat sldnderer. Two specimens of O. caribaeensis Dall (Bull.United States Fish Commission (1900),I,p.391,pl.56,fig.9,1901) were found occurring with O. trujilloi at Ponce,Puerto Rico, in the dredgings from the harbor obtained at approximately 30 feet.

O.caribaeensis appears to be more nearly allied to O.reticularis Lam. rather than to O. sayana as stated by Dall. O. reticularis was quite abundant at Puerto Plata in the dredgings,though it did not occur in our material collected at Ponce,Puerto Rico. At both stations it had a decided reddish cast." End Clench quote.

As mentioned by the author, the similarity of this species to Oliva caribaensis Dall is apparent in the presence of a large series from many localities. Note our comments under Oliva scripta Lamarck, Min.182,Nov.1958,p.26.

In 1937 it was our priviledge to receive several hundred specimens from Puertto Plata ,Domihican Republic from Mr. Harry Hurst. These specimens are certainly topotypes if not indeed a part of the original collecting. We are disposed to admit O. trujilloi with reluctance because of the simple fact that from the lot of specimens matching all requirements of Dr. Clench's description, we have taken a number that in turn seem to be typical O.caribaensis Dall and others that are questionably intergrades. With the specimens before us the probability that they are variations of one entity becomes apparent. (con.)

Oliva caribaensis Dall 1901 Mollusca of Porto Rico, By Dall,W.H. and Simpson,Charles Torrey, Bull. United States Fish Commission, (1900) 1, p.391, pl.56, fig.9,1901.

Dall's description follows," Shell rather short and stout, its greatest diameter being near the shoulder;spire low,the suture being deeply chanelled; outer lip heavy;columella having a strong white callus extending up for two thirds of the aperture, where it thins out; columellar plications numerous and distinct but not strong. The ground color is ashy yellow, becoming darker below, overlaid with a close faint reticulation of reddish brown. There are two faint bands of darker reticulations on the outside whorl and splashes and lines of this dark color under the suture. The interior is purplish; the columella is a little lighter colored. Length 32,diam. .15 mm. Mayaguez Harbor,Porto Rico.

A rather dull and inconspicuous species, the most cylindrical of the Antillean forms and perhaps nearest to O.litterata Lam." End Dall quote.

Distribution: The Burch collection contains numerous sets assigned to this species. One set is from Mayaguez,Porto Rico, A.F. Phares leg. 1955. These are obviously topotypes. Two other large sets are labelled as having been dredged off the east coast of the Canal Zone. These are certainly the same species.

It is interesting to note that while checking through the cabinets in one of our largest museums, we noted a set labelled Oliva scripta Lamarck from Santiago de Cuba. The present curator had written a question mark on the assignment to that species, but the former worker who made that label was not necessarily a complete novice. The shells are of the form discussed above.

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Oliva julieta Duclos 1833 P.L. Duclos,H.N. Coq.(Olive) 1833 pl.16 (n. et f.).

Authors have differed on the spelling of the specific name of this species. We are reminded of the old song about the sign painter and knocking the L out of Kelly. Tryon spelled it O.juliettae ,and has been followed by a number of others. H.R. Hill followed Tryon giving us the double T + the AE ending. Charles W. Johnson, Maxwell Smith and others have given the name an extra T spelling it julietta. Inasmuch as the author seemed to be content with one T and an A ending, we propose to follow Duclos unless we are offered some good reason for changing the spelling.

Tryon,Man.Conch.,vol.V,p.81,pl.28,fig.74,describes the species as follows," Shell very bulbous,with short spire;thick. Length 2 inches. (**(Tryon considered this a variety of O. araneosa Lam. in his usage). Tryon's discussion follows," Typical examples are so different in form from O. araneosa ,while the painting is more nebulous,that they would readily be distinguished as a species,but intermediate specimens are not wanting.This form also has several synonyms: O. timorensis Duclos (figs.75,76),said to come from Timor-which is evidently an erroneous habitat; one of these specimens is dark colored,resembling O. cumingii Reeve(fig.77),which must also be considered a synonym. O. mariae Ducros (fig.78), is a small specimen apparently, of this species; Kuster figures a larger shell under the same name (pl.24,fig.91); O. obesina (Duclos (fig.79), O. porcea Marrat (fig.80), and O. graphica Marrat (fig.81)are also to be placed here; and I am inclined to include O. truncata Marrat (fig.82),although it is said to come from the Cape of Good Hope. I believe this habitat to be erroneous;moreover a specimen received from Mr. Marrat is undoubtedly a young juliettae". End Tryon quote. We do not accept all of Tryon's conclusions re the synonymy.

Reeve,Conch Icon,Oliva,pl.9,species 15,a,b,describes the species as follows," Oliva julieta-Juliet's Olive-" Shell ovate,rather thick,swollen in the middle,then attenuated towards the spire,columella many-plaited,callously gibbous at the base;yellowish-white, brightly painted throughout with large blue-clouded black-brown dots,arranged in confused or brokwn angles,the brown rising in acuminated blotches next the sutures,apex pale violet,base obscurely marked with a faint violet blotch,columella and interior of the aperture yellowish white...Hab,Real Llejos,Central America(in sandy mud,at the depth of six fathoms);Cuming....This beautiful species bears the same relation to O. reticularis ,though the variety named O. venulata by Duclos,represented at Fig.16b in the next plate,as O. nobilis has with O.tremulina. Regarded separately the allied forms in both instances appear specifically distinct from each other,but it is impossible to deny that there is only one pervading idea of form and pattern in each. The typical pattern of O.reticularis is a network composed of brown dots,gathered into lines or acuminated blotches at the sutures. The dots become larger,more confused or broken up,and more conspicuous ,as in the variety O. venulata Duclos; and the character of this passes by an easy transition into O. julieta,distinguished by the same hieroglyphical marking at the base, and an indication of the violet blotch which is very characteristic throughout the series." End Reeve quote.

We do not agree with all of Reeve's conclusions, but his figures and description agree with our specimens in every way.

Maxwell Smith,Panamic Shells,p.34,fig.432, lists the range, Central America; Corinto,Nicaragua (Hyerdam); Mazatlan."

Weinkauff,1878 lists" Duclos em 17,3,4;Rv.15,a,b;Wk.11,5,8; var.= pantherina Phil. Abb.XIX,1,1,1-Central Am.biz.Peru." (con.)

Charles W. Johnson,Nautilus vol.24,p.122,1911 comments," This is apparently a good species, the thickening of the outer lip suggests a closer relationship to (O. angulata Lam.) than to spicata although the young of the three species resemble each other." End Johnson quote.

H.R. Hill,Nautilus,vol.68,p.68 stated," Formerly considered a variety of venulata ,this species has a characteristic thick lip and a vivid green ground color,overlaid by a pattern of dark arrow--shaped spots arranged in longitudinal rows. Synonyms are,Oliva porcea Marrat;O.mariae Duclos;O graphica Marrat; O. timorea and and O. timorensis Duclos." End Hill quote.

Weinkauff,1878, recognized and figured the following species here placed in the synonymy," Oliva truncata Marrat,41 Wk.32.7,Cap der guten Hoffnung- Oliva mariae Ducros 226,a,b;Wk.11,3,4,Mazatlan u. Unter Californien- Oliva timorensis Duclos em. 18,11-13 (timoria) non Marr.,Wk.11,10,11, ? Timor" End quote.

A.M. Strong, Minutes 49,p.16,June,1945, listed in his Key to Species of the genus Oliva on the West Coast, Oliva julieta Duclos 1835, Gulf of California to Peru. The entire key will be reprinted later in this series of papers.

Distribution: The Burch collection contains a long series from Guanacaste,Costa Rica, Ted Dranga leg.1954; Corinto,Nicaragua and Tenacatita Bay,West Mexico, ex. Gilbert Grau.

Keen in Sea Shells of Tropocak West America ,1958,p.420,species 621, lists the range ," Nicaragua to Peru; not common."

Oliva kaleontina Duclos 1836 Mon/Oliva ,pl.8,figs.7,8
Reeve,Conch.Icon.,pl.20,species 49,describes the species as follow, " The Woven Olive- Shell oblong-cylindrical,spire exserted,columellar plaits rather small;purple fawn interruptedly spotted and variegated with reddish chestnut, with oblong square spots beneath the sutures,columella and interior of the aperture purplish white. Hab. Bay of Guayaquil and Galapagos Islands (at a depth of 6 tp 12 fathoms) Cuming...There is a peculiarity in the form and coloring of this species which appears constant, and renders it easily recognized." End Reeve quote.
Tryon,Man.Conch.,pl.32,fig.28 describes as follows," Purple-fawn interruptedly spotted and variegated with reddish chestnut, with oblong spots beneath the sutures; columella and interior of the aperture purplish white.Length 33 mill...Bay of Guayaquil and Galapagos Islands in 6 to 12 fms." End tryon quote.
Weinkauff,1878, lists," Duclos,9,7,8;Rv.49;Wk,21,3,11-Peru,Guayaquil,Galapagos Islands." End quote.
Charles W. Johnson in Nautilus,v.24,p.68 under O. ispidula comments that a series leads to this species and others. We fail to see any connection with this group.
Distribution: A.A. Olsson in Nautilus37,p.123 reports the species from 3 localities in Peru. Sets in the Burch collection include typical specimens from the Galapagos, and a set from La Libertad, Ecuador. The last series is very largely typical, but contains a few specimens tending to merge into a solid chestnut with the markings almost obscured.

A. Myra Keen in Sea Shells of Tropical West America, 1958, p.420, species 622 lists the range," The southern part of the Gulf of California to Ecuador and Peru, more common in the southern part of the range."

Oliva incrassata (Solander,1786) Catal.Portland Mus.,1786,13 and 171. This species is well known as Oliva angulata Lamarck,1811, Ann.du Mus,xvi,p.310. The taxonomy is stated clearly by Charles W. Johnson,Nautilus 24:122 as follows," Solander and Lamarck both refer to the same figures by Martini (Conch.Cab.,II,tab.47,figs, 499,500). The O. timorea Duclos probably represents a small local variety, the locality " Timor" may well be questioned. The white form is var. nivea Pilsbry,(Nautilus 23:132)." End Johnson quote.

Tryon,Man.Conch.,p.82,pl.29,fig.84,describes as follows," Ovate, ventricose,very thick,angularly swollen above the middle;ash-white, mottled and spotted with olive and gray,and with occasional chestnut transverse streaks and zigzag markings;lip and columella flesh pink. Length 2.5-3.5 inches...The young shell is not angulated, and approximates to the last species (O. polpasta) in form, and somewhat in exterior coloring,but may be distinguished at once by the color of the columella and interior. Panama to Guaymas." End Tryon quote.

Reeve,Conch.Icon.,pl.1,species 1, describes as follows," The Angled Olive--Shell ovate,ventricose,very thick,ponderous,angularly swollen above the middle,spire rather short,columella very callous, flatly plaited,plaits almost obsolete;ash-white,mottled with olive and grey,longitudinally painted here and there with sharply angled transverse very dark chestnut streaks,columella pale carnelion tinged with rose,..Hab.Gulf of Nicoya,Central America (in sandy mud at the depth of nine fathoms);Cuming. ... There is little variation in this species.which is distinguished from all others by its very thickened angular growth, and sharply zigzag bold splashes of coloring." End Reeve quote.

Weinkauff,1878, lists the following references(as O. angulata) Kust.2,1,2;Duclos,18,9,10; 34,7,8; Rv.1,a,b; Marrat 7,8;473 (incrassata var. o. timorea Marr.non.Ducl. Californien bis Central-America."

Keen,Sea Shells of Tropical West Am.,1958,p.420,no.620 states, " The thick shell is, in the adult, angularly swollen above the middle, resulting in a distinctive outline. The coloration is a dove-gray to brown, with fine zigzag pattern of markings on a creamy-white ground,tinted with pink on the columellar area. Young individuals do not have the angle developed at the shoulder, but may be distinguished from O. spicata ,when alive,by the fawn-colored soft parts spotted with brown(Gifford,1951). Height 55 mm;diameter ,30 mm. A large specimen may be three inches or more in height. Magdalena Bay, Lower California,throughout the Gulf and south to Peru,the preferred habitat being the outer side of sandspits at extreme low-tide level. Not uncommon." End Keen quote.

H.R. Hill,Nautilus 68,p.68, discusses the species as follows, " The Angled Olive is not angled at the shoulder in the juvenile state. Young shells resemble Oliva spicata venulata in their markings,but can be distinguished from the latter by the pink tinge of the lip and columella. Adult shells usually have a ground color of creamy white or light yellow,overlaid by brown spots and several longitudinal rows of black blotches. Two interesting color varieties occur at San Felipe,West Mexico, at the northern end of the Gulf of California. One unnamed variety is orange in color and devoid of markings. The other, O. nivea Pilsbry is pure white.The type was described from a shell with a slight trace of dark.Recently, however, an entirely white specimen was collected at San Felipe by Mrs. Milton Zim." End Hill quote.

Note- Mrs. Zim found the O.i.nivea on Feb.22,1952,on a sandbar, about 150 ft.below high tide line,about 1 or 1 1/2 mi.north of San Felipe,B aja Calif. (con.)

Mrs. Jean Wilkens found another pure white specimen at Ensenada Blanca, Lower California, which is in the same general locality. The exact place was stated to have been some 4 miles north of Ensenada Blanca.

It may be of interest to give the original description of this form. Pilsbry, Nautilus 23:132,1910," Albino Oliva angulata- - We have recently received for examination a large and perfect specimen of Oliva angulata which is snow white except for a small fleshy-brown stain on the callus at the posterior angle of the aperture and a rusty yellow stain in front of the callus. This albino, which may be called nivea, is the first to be reported of this species, so far as we know. It seems to be an extremely infrequent variation. The specimen measures 83 mm.long,42.5 wide. It is the property of A.L. Hettrich Company of San Francisco. H.A. Pilsbry." End Pilsbry quote.

Distribution- The Burch collection contains many large sets and growth series ranging from Panama Bay to numerous localities in the Gulf of California. There is comparatively little variation, but it may seem that those from the southern end of the range are not quite as heavily shouldered as those from the Gulf. The much sought after golden color form seems to be confined to the Gulf of California, so far as our records indicate. We have seen none of this color from Central America. Mr. Ross Stotter showed a beautiful series of the golden shells at both of the last two meetings of the A.M.U.P.D. His specimens were from the Gulf. Herbert N. Lowe, Nautilus, vol.47, p.47, reported from San Felipe, " Oliva incrassata were very abundant at this time, and about one in fifty showed a yellow tinge; a single golden yellow specimen was taken." Lowe again in Nautilus, vol.48, p.4," On the Sonoran side of the Gulf-1934- Near La Cholla, the huge Oliva incrassata were burrowing." Of the specimens observed in the San Diego Museum of Natural History, one set was noted as being of exceptional size and quality. These were collected by H.N. Lowe in 1931 from Puntarenas, Gulf of Nicoya.

It was our pleasure to study the specimens collected by Mrs. Dorothy Brown, and the following notes were made. Ensenada Blanca, 5 mi. N o. of San Felipe, B aja Calif.- A fine growth series, Feb., 1957, containing specimens ranging in size to 75 mm x 40 mm. Miss Ann Brown took one fine golden color shell and others blending into the golden from the same location, April, 1958. Another lot taken near Percy Vaux, about 22 miles south of San Felipe, Feb.,1957- tide -0.5 with note," Hundreds of olives on a single sand bar, with about 1/6 of them with yellow or gold markings". A large series with all intergrades from the pur gold to the typical. An interesting growth series from the very juvenile taken from Ensenada Blanco. Some of these indicate the tendency to the golden when very young. The juveniles are obviously not shouldered as are the O. spicata var. subangulata of the same size. A fine series of the very juvenile from Hotel Beach, San Felipe, Dec., 1956. Another large series from Puerto Penasco, Nov., 1955.

THE RADULA IN THE FAMILY OLIVIDAE

Is a variation in the radula sufficient grounds upon which to place a species in a separate genus, removing it from other species which possess many identical or related characters? This question is asked hoping to receive answers from others interested in molluscan systematics.

The fantastic variation in the radulae of some families such as the Volutidae would seem to place almost every species in a separate genus. The same is in a measure true of the Conidae and many other families.

We are now engaged in a study of the Olividae. Dr. Axel A. Olsson has published some very thorough studies in the genus Olivella , and has removed some species from that genus on the radular basis. Insofar as we know, no extensive studies have been made on the radulae of other groups of the family Olividae. The literature is fragmentary, but indicates another great confusion in the nomenclature if followed.

A typical paper is that of Lieut. Col. A.J. Peile,Proc.Mal.Soc.Lon. vol.15,p.18. We quote Peile as follows," Examination of three species of Olivella gives interesting results. Olivella nympha Adams and Angas (fig.6) has a radula with multicuspid rhachidian , which appears to be the normal form in Olivella.
Olivella pardalis Adams and Angas , and O. brazieri Angas, however, have a tricuspid rhachidian,similar to that of Oliva ,but with a minute additional cusp outside each of the lateral cusps. These minute cusps are well marked in brazieri (fig.7) ,but very small and sometimes missing in pardalis. A Gwatkin specimen of brazieri from Tasmania agrees with the Twofold Bay specimens. All three species are operculate.
I propose for these southern species with tricuspid rhachidians the genus: Belloliva (a name suggested by Mr. Iredale), type species brazieri Angas." End Peile quote.

The value of radular studies in classification is beyond question, and we cheerfully accept the fact of the interesting variation in radular characters of the group assigned to his Belloliva, but we are well aware of the tendency toward substantial variation in the radulae of specimens of one species. It is suggested here that we study the radula as another character rather than the final conclusion.

If we are to concede that every slight radular variation constitutes a new genus, we must prepare to accept a host of new generic names. What is a subspecies ? Is there any sound reason not to consider such variations under subgenus or section ?

Oliva spicata (Röding,1798) Porphyria spicata Röding, Musem Boltenianum,p.35

The literature on the history and many variations of this species is voluminous. The disposition of most modern authors has been to lump all varieties as forms of one species. This conclusion may be sound, but it is our opinion that the last word has not been written on this assemblage. Therefore, we propose to outline some of the data on the more familiar forms.

A short time ago we visited Mr. Naylor of San Diego, a dealer in commercial shells. We found that he was unhappy about two large lots of olives. His trade in these is largely to the Indians who use the shells to make various artifacts. It seems that he Indians have rejected one variety claiming that the shells shatter when worked and are unsatisfactory. At first glance the shells in question reminded us of the color variety venulata Lamarck. We brought home several hundreds of both lots, the accepted and the rejected. The markings on both are almost identical, gray background with a solid network. All were from La Paz traders.

First-the accepted variety, called here for convenience, the typical Oliva spicata var. venulata. These shells are heavier,with lower spire,more obese than the following lot. Specimens of this lot consistently have the base of the columella white with perhaps a tinge of pink.

Second- the rejected lot, called here for convenience var. ustulata Lamarck. The base of the columella is consistently a light purple instead of white; the shells are more slender, and have a higher spire. Interior of the apertures of both are a bluish white.

Conclusion- It is easily seen how the two could have been mixed and classed as one form. Nevertheless,after a little study, they readily separate into two groups. It seems odd that we should so readily accept the policy of lumping all of these variations under the one name, Oliva spicata ,when other groups are happily divided into a multitude with seemingly far less reason.

Charles W. Johnson,Nautilus, vol.24,p.121,1911, states," Both Bolten and Lamarck refer to the same figure by Martini (Conch.Cab. II,tab.48,fig.509), and Bolten refers to it a second time under arachnoidea. In adopting Lamarck's names, venulata (p.313) should have been the species as it appeared before araneosa (p.315).The first figure referred to by Lamarck under venulata is in the Encyc. Meth.,pl.361,f.5; the second reference is to Martini (II,tab.46, f.488) and happens to be the figure on which Bolten based his litterata. It includes the oblong forms scarcely separable from the O. spicata ,it,however,prevents the use of Lamarck's name of litterata. O. graphica and O.porcea Marr. are only shorter and more ovate forms. Among the variations of this species is an interesting form from San Ignacio Lagoon,Lower Calif.,collected by Mr. Henny Hemphill. It is noticably narrower with a higher spire and the periphery slightly angulate,the reddish reticulations are obscured by a milky white layer. Represented in the Ford collection by six specimens bearing the manuscript name hemphilli. The variety pindarina Duclos (punctata Marrat) is the common slightly angulate form,quite regularly marked with dark brown or white,obsoletely marked with light brown,frequently entirely white,fasciole reddish. Specimens in which the markings are obscured by a dark brown layer constitute the fuscata Marrat;similar specimens having the form of graphica are ustulata Lamarck. Brown examples of typical spicata might bear the name perfects. Specimens abnormally angulated at the periphery constitute the subangulata Philippi. (con.)

The variety polpasta Duclos is the short broad form so densely marked as to form an olive green ground, spotted with dark brown, and with white triangles below the suture. The variety cumingii Reeve is yellow,banded or streaked with brown, it often suggests O. peruviana Lamarck. " End Johnson quote.

Charles W. Johnson,Nautilus vol.28,p.115,1915 lists the synonymy,
Porphyria spicata Bolten,Mus.Bolt.,p.35,1798
P. arachnoidea Bolten, Mus. Bolt.,p.36,1798
P. litterata Bolten,Mus.Bolt. p.36 (not Lamarck)
O.arancosa Lamarck, Ann.Du.Mus.,p.315,1810
O. melchersi Menke, Zeit.fur Mal.,p.24,1851
var.hemphilli Johnson,Naut.24:122,1911
var. subangulata Philippi, Abb.xix,tab.1.f.2 1848
var.oniska Duclos, in Chenu's Ill.Conch.,ii,pl.32,f.9
var. perfecta Johnson 1911 Naut. 24:122
var. pindarina Duclos, in Chenu's Ill.Conch.,ii,pl.12,f.10;pl.17, f.7,8
    punctulata Marrat Thes.Conch.,iv,pl.2,f.12,13
    harpularia(Lamarck) Reeve,Conch.Icon.,pl.14,f.28(decorticated)
var. venulata Lam.1810 Ann.du Mus.,xvi,313
    reticularis Reeve (pars) Conch.Icon.,vi,pl.10,f.16b
    obesina Reeve (pars) Conch.Icon.,vi,pl.10,f.16c
    mariae Ducros Rev.Crit.p.50,pl.2,f.26
var.graphica Marrat Thes.Conch/,iv,pl.3,fig.36
    porcea Marrat Thes.Conch.,iv,pl.3,f.35
    oblonga Marrat Thes.Conch.,iv,pl.2,f.14
var. violacea Marrat Thes.Conch.,iv,pl.4,fig.56
var.ustulata Lamarck Anim.sand Vert,6.620,1822
    oriola Duclos (not Lam,) in Chenu's Ill.Conch.,ii,pl.11,f.1,2
    fuscata Marrat Thes.Conch. iv,pl.2,f.20-22
    brunnea Marrat Thes.Conch. iv,pl.4,f.54-55
var.polpasta Duclos in Chenu's Ill.Conch.,pl.17,f.1,2
var.cumingi Reeve,Conch.Icon.,vi,pl.xi, 1950
    lignéola Reeve (pars) Conch.Icon.,vi,pl.21,f.57,a,b (juv.)

End Johnson quote

Tryon,Man.Conch.,vol.5,p.81,pl.27,figs.61,62;pl.28,figs.63-74; pl.29,figs.75-83. Tryon described the species as O.araneosa Lam. now placed in the synonymy of O. spicata (Röding). Tryon's description follows," Oval cylindrical, a little constricted around the upper part of the body whorl, and sometimes with a faintly angulated shoulder; the spire prominent;cream color,overlaid with a closely reticulated pattern of brick-red to chocolate, and fasciculations of the same color at the sutures; interior cream white or lightly tinted blue or chocolate. Length 1.5-2.25 inches. Panama to Cape San Lucas. Is a larger heavier, less cylindrical species than O. reticularis of the West Indies-- of which it is the West Coast representative;the two are very probably of common derivation. The figures cited by Lamarck well represent the species-- which is better known under the name of O. melchersi Menke.Weinkauff having restored the Lamarckian name, I follow him,but would otherwise have hesitated to drop a well known designation in favor of one which is, in fact, almost unknown. The other synonyms are, O. oblonga Marrat (fig.63), O. pindarina Duclos (fig.64), O. subangulata Philippi (fig.65), an angulated form, O. fuscata Marrat (fig.66), a dark variety,O. oriola Duclos (fig.67), which is somewhat lighter than fuscata, O. harpularia Lam.(fig.68) described from a worn shell,O. intertincta Carpenter (fig.69),a juvenile and O. violacea Marrat (fig.70)." End Tryon quote.

H?R. Hill,Nautilus 68,pp.66,67 discusses the species as follows, " Typical O. spicata (Röding) is a common species, 2 1/2" in length,ranging from West Mexico to Panama Bay.The typical form is found in the same regions as many of its color varieties.The shell is elongate with a moderate spire.The color of the aperture is white.Externally, the ground color is light gray or light yellow, shaded with a loose network of brown,pink-gray or blackish markings. The network in some individuals is broken up into spots.The sutural fasciculations are elongate and dark in color. The synonyms are: melchersi Menke,oriola Duclos,araneosa Lam.,oblonga Marrat,intertincta Carpenter,arachnoidea Röding. ..Oliva spicata has had 28 different names applied to it and nine varieties. End Hill quote.

Keen, Sea Shells of Tropical West America, pp.421-422,1958 describes the species as follows," Oliva (Oliva) spicata (Röding,1798) (Synonyms: O. venulata and ustulata Lamarck,1811; O.oniska,oriola, pindarina Duclos,1835; O. subangulata Philippi,1848;O.cumingi Reeve, 1850;O. melchersi Menke,1851;O. intertincta Carpenter,1857;O.fuscata,violacea Marrat in Sowerby,1800;O.hemphilli,O.perfecta Johnson 1911). Most variable of the West American olives, this is basically a buff-olive color,flecked with small irregular dots of brown.The spire is fairly high.Numerous color forms have been named,as indicated above,O.cumingi being a plain-colored shell with two or three wide brown bands,O. fuscata being an almost uniformly colored dark brown with V-shaped markings showing faintly through the glaze.As all of these color forms can be found in any large colony,they are not worthy of subspecific rank. However, O. polpasta and O.julieta are more plausible subspecies,the former being a short and rather bulbous form,the latter a large and light colored one. An average specimen of O. spicata measures about 45 mm. in length, 23 mm.in diameter. The range is from the northern end of the Gulf of California to Panama;common. The Giffords reported (1951) that the animal itself is buff colored and marked with short brown wavy lines. Continuing Keen quote on species 623,p.421-" Oliva (Oliva) polpasta Duclos,1835 (Synonym: O. callosa Li,1930). By many authors this is regarded as a subspecies of O. spicata. It is distinguished from that species by the more pear shaped outline,the uniform dull gray background spotted with brown, and the finer liration of the columellar wall. Length, 36 mm.; diameter 20 mm. Magdalena Bay,Lower California,throughout the Gulf and south to Ecuador; not uncommon." End Keen quote.

Distribution and comment on certain of the many sets of this group to come to our attention.

Conception Bay, Gulf of California, in the San Diego Museum Coll. This set is of the form discussed on p.20 and called var.ustulata with no intention of defending this name other than to separate the two forms. This lot is of the type having a dark lavender fasciole and base of columella. Another set of specimens obviously very juvenile and labelled O. s. venulata from Santa Maria Bay, Lower California,H.N. Lowe,1931 seem to be young of the same form mentioned above from Conception Bay. There are numerous sets of a form with a dark brown overlay in the San Diego Museum. These seem to be quite different from the above at first glance, but also have the dark columella with purplish tinge. One large set of these is labelled San Jose Island, H.N. Lowe,1932.

Another interesting series in the museum are labelled Cocos Island, Costa Rica. These are bright shells but higher spired than usual and with a decidedly yellow tint to the interiors. All seem to be uniform, large specimens 2 1/2" down to juveniles. (con.)

A set in the San Diego Museum labelled La Paz are perfect albinos, immaculate white. They are fresh shells, bright, with no indication of markings. The Burch collection contains several sets of shells of an entirely yellow and golden yellow, also from La Paz. Other sets in the Burch collection that must be regarded as typical are from Guaymas,Sonora,Mexico; Tenacatita Bay, West Mexico; La Paz. Another large set came from Angel de la Guardia Id.,Gulf of Calif. Some of these are very light colored, some tending to the violet interior, and all with dark bluish lower folds on the columells.

var.cumingi Reeve,1850 Conch.Icon.,pl.11,species 19. Inasmuch as this varietal name is in very general use by collectors we quote Reeve's description as follows," Cuming's Olive- Shell cylindrically oblong,swollen posteriorly,rounded,spire short, apex rather exserted,sharp,columellar plaits flattened, almost concealed, columella swollen at the base;orange-saffron color,variously banded with unspotted chestnut and blackish-brown,base of the columella faintly tinged with livid purple,interior of the aperture bluish white. Hab. Gulf of California;Donnet... This appears to be very distinct from any species yet described, and is remarkable for the absence of any pattern of marking in the painting,which is of a warm orange-saffron hue,simply cross-banded." End Reeve quote. Weinkauff,1878, lists this form as a species," Rv.11,19 a.b.; Marrat 39,40; Wk.21,2 - Californien."

Distribution: Many specimens may be seen from La Paz and vicinity that fit this description perfectly. We have seen no intergrades with this color form. Large sets have been repeatedly added to the Burch collection. Mrs. Dorothy Brown collected a fine series of this color form from La Paz, July,1956 on " mud flats at low tide."

var. fuscata Marrat Thes.Conch. iv,pl.2,f.20-22

This variety is so close to the typical that it should no doubt be ignored. However, the varietal name is often used for the specimens of typical form but with the color pattern largely obliterrated by reddish-brown. This color character certainly merges into the typical with clear pattern in our opinion. Distribution:- Large lots are sent to us from Panama Bay labelled with this name. Many of them are of exceptional size running to 60 mm. in length. Other large lots arrive from Panama labelled O. melchersi Menke. Specimens of these are not separable from the above. They should be considered typical O. spicata. However, for the possible distribution, the Burch collection contains sets identical with the above from Gulf of Dulce,Costa Rica, and from Port Utria,Colombia. O.perfecta Johnson must be the same.

var. hemphilli Johnson,1911 Nautilus 24:122

This variety was described for form in which the reticulations are obscured by a milky white layer. Specimens showing this color character are not uncommon from La Paz, but have no systematic importance in our opinion. They merge into the typical.

var. obesina Duclos,1835 Monog.t.16,f.9-11.

The status of this name even as a variety is in some question. Tryon placed it in the synonymy of the West Indian species we know as O. fulgurator (Röding), However, the name is also used for a form of this assemblage applied to specimens with a bulbous body whorl,gray ground color, and dark scattered spots.
The Burch collection contains such shells from La Libertad,Ecuador Rio Grande Bay,W.Mex. Large shells probably merging to O.polpasta.

var. pindarina Duclos In Chenu's Ill.Conch.,ii,pl.12,f.10;pl17,f. 7,8. Synonymy,(O.punctulata Marrat,Thes.Conch.iv,pl.2,f.12,13).

Charles W. Johnson, Nautilus 24, describes this form as follows, " The variety pindarina is the common slightly angulate form,quite regularly marked with dark-brown or white,obsoletely marked with light brown, frequently entirely white,fasciole reddish." End quote.

This form is recognizable and separable from all others, but the fact that the markings though somewhat obscured are identical with the typical combined with the fact that the specimens are taken with other forms on the same mud flats indicates that it is at best a genetic variation.

Distribution- Specimens in the Burch collection from La Paz are extensive. The specimens we assign to this color form from La Pa are cream color or at times almost white but showing the pattern lightly. The reddish fasciole is consistent. The inside of the outer lip shows irregular dark brown dashes. Mrs? Dorothy Brown collected a large number of specimens of this form at La Paz,July, 1956, on mud flats at low tide along with other forms.

A.A. Olsson,Nautilus,37:123,1924 reported this variety from Salinas,Ecuador. A set in the Burch collection from Tumbez,Peru, J. Bravo leg. ex Gilbert Grau, seems to be the same form.

var. polpasta Duclos,1833 ,Mag.Zool.,yr.3,cl.5,pl.20,1 fig.;1844-1845, in Chenu,Illustrations conchologiques,Oliva,p.26,pl.17,figs. 1,2 Reeve,1850,Conchologia iconica,vol.6,Oliva, sp.29,pl.14,figs. 29a-29c. Marrat,1870-1871, in Sowerby,Thesaurus conchyliorum,vol.4, p.6,pl.331(Oliva pl.4),figs.42,43. M. Smith,1944,Panamic marine shells,p.34,figs.428,433. Oliva callosa Li ,1930,Bull.Geol.Soc. China,vol.9,p.271,pl.7,fig.61,dredged in Panama Bay from depths from 10 to 40 feet in mud at the mouth of the Rio Grande near La Boca,about 1 mile from the mainland; = O. polpasta Duclos according to Pilsbry,1931,p.433.

The possibility that this form may be recognized either as a distinct species or a valid subspecies suggests a careful study of the specimens.

Tryon,1883,Manual of Conchology,vol.5,p.82,pl.29,fig.83 (copy of Marrat's fig.43) and as [Oliva araneosa] var. polpasta Duclos, describes the form as follows," Light olive, the reticulations broken up into nebulous spots and occasional arrow-head markings; the fasciculations at the sutures spread from centres at regular distances,between which the shell is yellowish white. Length 1.25 to 1.75 inches. ... The form is much like julieta ,from which it is to be distinguished by its smaller size,darker color, and especially by its gay alternation of white spaces and fan-like chocolate fasciculations at the sutures--which are none of them stable characters." End Tryon quote.

Reeve,Conch.Icon.,pl.14,species 29,a-c, states," The Tumid Olive Shell ovate,thick,ponderous,stout and swollen posteriorly,spire rather short,obtuse at the apex,columellar plaits numerous,short, anterior plaits sometimes rather flattened;ash-olive,obliquely marked with hieroglyphic spots and dots, with yellowish reticulated spots next the sutures,columella and interior of the aperture bluish-white. Hab. Bay of Montija,Veragua,Central America (in sandy mud at a depth of about thirteen fathoms. Cuming...It is not difficult to connect this olive , as well with O. julieta , with O. reticularis ,in both of which forms the network of the typical species is broken up into a confusion of dots and dashes." End Reeve quote.

Charles Johnson,Nautilus,24, stated," The variety polpasta Duclos is the short broad form so densely marked as to form an olive-green ground,spotted with dark brown, and with white triangles (con)

below the suture." End Johnson quote.

H.R. Hill,Nautilus 68:67 stated," O. polpasta Duclos is quite similar to venulata,but more slender and lighter in color.The network pattern is more or less broken up into dark spots.Occasionally two wide, cream-colored bands encircle the body whorl." End Hill quote.

A. Myra Keen, Sea Shells of Tropical West America, no.623,p.421, 1958(see p.22, this paper) suggests that this may be a valid subspecies and separable from O. spicata " by the more pear shaped outline, the uniform dull gray background spotted with brown, and the finer liration of the columellar wall."

Leo George Hertlein and A.M. Strong,Marine Mollusks Collected During the " Askoy" Expedition to Panama..Bull.Am.Mus.Nat.Hist., vol.107: Art.2,1955, p. 236-237,pl.3, fig.10,discusses the form as Oliva polpasta Duclos. " Shell short,rather broad and ventricose, widest above the middle,spire generally low; olive-green to light brown ground color marked with dark brown dots and dashes or longitudinal zigzag lines, and just anterior to the suture there is a row of yellowish white trigonal spots,columella and interior of aperture bluish white;parietal wall lirate. Remarks: Most of the specimens of this species in the present collection are small.There is considerable variation in the shell of this species; some specimens are much more inflated than others. The specimens in the present collection agree well with the illustrations of the species as given by Duclos except that the ground color is brownish olive or light brown rather than olive-green. Our shells agree exactly with Reeve's interpretation of this species. A study of a series of specimens of O. polpasta suggests that there is gradation towards the forms of O. spicata venulata Lamarck on one hand and O.julieta Duclos on the other. It may be easily separated from O. peruviana Lamarck by the coloration, lower spire, and more consistently lirate parietal wall." End Hertlein and Strong quote.

Distribution and comment- The Burch collection contains sets from many localities agreeing in all details with the description and figures given and cited by Hertlein and Strong, A. Myra Keen and others. However, there are too many problem sets for us to be happy with an assignment to a distinct entity. It is possible that further study may clear some of our confusion on the matter, but the notes on a few of the sets follow and are self explanatory. Gonzaga Bay, Lower California, taken with specimens of the very heavily shouldered form subangulata of O. spicata. These specimens are not typical of polpasta being somewhat less inflated and possibly a little lower spired, but they seem to be nearer polpasta than to any of the other forms of O. spicata. Galapagos Islands, Ex. Gilbert Grau. An interesting series from the very juvenile to the adult. Many of them have two wide light colored bands on the body whorl. These appear with equal clarity on the very juvenile as well as the adult. The entire set is not as dark in color as most from Panama etc., and in addition show substantial variation in form,but including obviously typical polpasta. San Francisco Bay,Ecuador, J. Bravo leg.,long series mostly typical. Port Parker,Costa Rica, typical series with a few problems. San Felipe, Baja Calif., largely typical. La Paz,Mex. a large set of strikingly banded shells. Culebra Bay,Costa Rica, H. Miller leg.,1947, a large set including some interesting variations and most of them lightly banded. Playa Blanca,Costa Rica, typical.Perlas Islands,Panama ex Mrs. McDermitt, fine and typical. Puntarenas,Central Am. H.N. Love,1931- There is a set in the San Diego Museum ,typical,but of very exceptional size,giants of these.

var. subangulata Philippi 1848 Abb.xix,i,t.1,f.2

Charles Johnson, Nautilus 24,p.121 states," Specimens abnormally angulated at the periphery constitute the subangulata Philippi" End Johnson quote.

H.R. Hill,Nautilus 68,p.67 states," Oliva spicata subangulata Philippi has a characteristic angular shoulder on the body whorl. It might be mistaken for a small Oliva angulata Humphrey. However, the young of the latter, when they are the same size as the full grown subangulata do not have a well developed shoulder angle. The network pattern of dark lines is speckled with black, triangular spots arranged in interrupted lines." End Hill quote. Note that in this paper O. angulata = O. incrassata Sol.

Oliva davisae Durham,1950 Mem.Geol.Soc.Am. no.43,pt.2,p.103, pl.26,figs.3,5, described from the Pleistocene of Santa Inez Bay, Gulf of California. Hertlein and Strong,Bull.Am.Mus.Nat.Hist., vol.107,Art.2,1955,p.237, place this species tentatively in the synonymy of O. polpasta. However, this would indicate that the species polpasta must be very broad to include such a shell. It seems to us to be very close if not identical to forms of O.spicata often assigned by authors to the variety subangulata Philippi. The San Diego Museum contains several interesting sets assigned to this species. One labelled Magdalena Bay, ex. J. Sefton Coll. is a bright cream colored specimen indicating a distinct and peculiar variation; other sets include one large series from Santa Maria Bay, Lower California. These sets are all composed of specimens abnormally angulated at the periphery, and we consider them the form assigned by many authors to the variety subangulata. However, the relationship of O. davisae to the fossil fauna is unknown to us. We are discussing the recent specimens before us.

Distribution and comment-Santa Maria Bay, Lower California,-A large set in the Burch collection contains examples obviously of this form and including specimens from the very juvenile to the adult, but collected with others that merge into the typical higher spired O. spicata. Another set from Pt. Parker,Costa Rica, are composed entirely of this form and typical, but may very well have been selected from a lot containing others.

San Francesquito,Baja Calif.,May,1957, tide -0.8, collected by Mrs.Dorothy Brown. An interesting set of the dark colored specimens of this form. Specimens of the same size and identical markings range from the heavily shouldered to specimens that might be separable from var. venulata with difficulty if not in this series. Chollo Bay,Puerto Penasco,Sonora,Mexico,Nov.,1956, tide -1.4. Collected by Mrs. Dorothy Brown. Higher spired than O. incrassata of the same approximate size, the angle of the outer lip curves more abruptly and nearer the posterior of the aperture. This entire colony is obviously composed of specimens of a lighter color than seems to be the color of most.

Mrs. Dorothy Brown collected a large set of this form from San Luis Gonzages,Gulf of California,Baja Calif.,tide -1.2,May,1958. Note by Mrs. Brown," This olive is far less common than O. incrassata although there were not many of either in the immediate bay." This set is of the deep greenish checked dark colored type in color, and is perhaps more abruptly angulated than those from the other side of the Gulf. It is interesting to note that young O.incrassata were collected with them. It is puzzling that the folds on the columella should seem to run farther to the posterior on the subangulata from Chollo Bay than on those from San Luis Gonzages.

Conclusion- Definitely a form,not a consistent subspecies.

var. *ustulata* Lamarck 1811 Anim.sand Vert.,v.10,p.620 1822
First ref. Ann.Mus.H.N. (Paris) XVI(94) inter Jan.-Mar,1811,320

It seems that several different forms have been recognized under this name by various authors. Tryon,Man.Conch,,vol.V,pl.30,fig,92, figures a specimen copied from Thes.Conch.f.25, which is a form of *O. reticularis.*

Charles W. Johnson, Nautilus 24,p.121, states that *O. graphica* Marrat 1870 (Thes.Conch/p.6,t.3,f.36) is only a *shorter and more* ovate form of typical *O. spicata*, and that the form *O. fuscata* Marrat (discussed on *page 23 of* this paper) are *those in which* the markings are obscured by a dark brown layer, and similar specimens , but of the form of *graphica* are the variety *ustulata.* In short, Johnson considered *ustulata the* same as *fuscata other* than being shorter and more *ovate.*

It would seem needless to discuss this form other than the fact ~~t~~ that there are many sets of specimens in some of our largest collections labelled with this varietal name. Furthermore, there is no question but that specimens may be selected that fit all of the characters mentioned. There are a number of them in the San Diego Museum. It might be mentioned also though that Charles W. Johnson in a later paper, Nautilus 28,p.115,1915 placed *fuscata* in the synonymy of *ustulata.*

var. *venulata* Lamarck 1811 Ann. du Mus. xvi,313

Tryon,Man.Conch.,v.5,p.81,pl.29,figs.71-73, describes as follows, " Shell shorter,more swollen around the upper part;spire shorter; painting usually darker,the reticulated pattern more or less broken up into nebulous spots. The synonyms are *O. punctata* Marrat (fig.72), and *O. pindarina* Marrat (not Duclos)(*fig.73)." End* Tryon quote. *H.R. Hill,Nautilus*, vol.68,p,67 states," This variety is the most common form of *spicata* , and is called " The Netted Olive" because of its network *pattern* of either yellow or gray or olive, Lamarck described a decorticated or worn specimen of his *venulata* as a distinct species, *Oliva harpularia* , which is illus*trated* in Reeve's monograph of *the olives. Oliva punctata* Marrat is also a synonym of *venulata."* End Hill quote.

Distribution and comment- The Burch collection contains many large sets of this form. It was discussed in part on page 20 of this paper. There is no doubt but that this form is simply a genetic variety of *O. spicata*, but it is well known and cannot be ignored. In fact, *it is one* of the standard commercial shells, and is stocked and sold by commercial dealers in lots of hundreds of pounds. Some time ago we saw one shipment of four hundred pounds consigned to one buyer. This was an amazing lot of olives. When such a dealer receives an order for a substantial lot of *venulata* , the manufacturer of artifacts will not accept a mixture *of other* forms. Therefore, it would seem that such a standard commercial item should be entitled to at least passing notice by systematic students. The variety is very abundant from La Paz. Mrs. Dorothy Brown collected a beautiful series of this variety from La Paz, in July,1956, on mud flats at low tide.

var.*violacea* Marrat 1870 Thes.Conch.iv,pl.4,fig.56

All *descriptions* of this variety indicate shells of typical form in every respect other than that the aperture is violet. Inasmuch as this is not a constant character, and is frequently noticable in certain specimens of one lot and not in the others, we suggest that this name be ignored.

Minutes of the Conchological Club of Southern California
Dec.2,1958

Dr. Homer King, the president, called the December 2nd meeting to order about 7:30 P.M. in the cafeteria of the Los Angeles County Museum, and announced that inasmuch as this was our Christmas party, the business meeting would be short.
There were no reports of officers.
34 members were present.
It was moved by Don Shasky and seconded by Mrs. Burch, that an honorary membership be given to Mr. Harry J. Bauer in recognition for his part in making possible the new book by Dr. A. Myra Keen, Sea Shells of Tropical West America.
All present were unanimous in their praise of this long needed work. The motion was carried and it was asked that a resolution be drawn up.
As Miss Keen is an honorary member, a letter of congratulation will be sent to her.
Mrs. Burch read the list of honorary members,
Mrs. Effie Clark
Dr. A. Myra Keeh
Mrs. Emory P. Chace,
Mr. Emory P. Chace
The chairman of the evening thanked her committee, Mr. Fitch as GIFT chairman.
Mr. Kanakoff for arranging our meeting place,
Miss Delp for the punch,
Mrs. Brown for the coffee.
Mrs. Hazlewood for a beautiful large Christmas decorated cake, and all others who volunteered goodies.
Next was the presenting of gifts. Many fine and beautiful shells were exchanged.
After admiring the gifts, there was a showing of colored pictures taken since last Christmas.
The meeting was adjourned and a feast was enjoyed.

Rose L. Burch
(Mrs. John Q. Burch-Sec.pro.tem.)

Officers for 1959
Donald Shasky,M.D.- President
Crawford Cate- Vice-President
John Fitch-Secretary
Homer King- Treasurer

MINUTES 185

FEB. 1959

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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Type Specimens of Marine Mollusca Described by P.P. Carpenter from the West Coast (San Diego to British Columbia)
By Katherine Van Winkle Palmer- Memoir 76, The Geological Society of America.

This book will take its place on the shelf with the great contributions to the conchology of the Pacific coast.We have known for years that Dr. Palmer has been working on the P.P. Carpenter species,but the amount of detailed work involved in the preparation of this work is amazing.

The fact that Carpenter described more than 500 new species, many new genera, and voluminous notes on other species, places his work second only to the work of Dall and Bartsch. Our great problem is well stated by Dr. Palmer," The absence of figures in Carpenter's works has been a source of criticism of otherwise exceedingly deserving efforts. Less careful and less brilliant conchologists of his day have not been so severely judged, for they included illustrations in their works....It has been assumed by many workers that Carpenter did not designate types and that most of the specimens have been lost. Neither of these assumptions is correct." End quote.

The actual location and listing of the depositories of the many types that remain available is alone a matter of inestimable value to all serious students of this fauna. (Con. on page 13)

Additions and Corrections

Our final list of species will serve as an index to the various references to the species. We expect to list all names mentioned including those we have placed in synonymy with references to the page and number of the Minutes in which the name has been mentioned. Advice on points of nomenclature and distribution will be sincerely appreciated.

******

Dr. Katherine V.W. Palmer has called our attention to the following Bulletin of Zoological Nomenclature. In Minutes 183,p.9, we listed the type species of the genus Ancilla as A. ampla (Gmelin). The reference should be,genus Ancilla Lamarck,1799, type species by monotypy, Ancilla cinnamonea Lamarck,1801. A discussion of the bulletin follows.

The question was raised by the following ," Request for a Ruling on the Question of the TypeSpecies of " Ancilla" Lamarck,1799 (Class Gastropoda) By Katherine V.W. Palmer (Paleontological Research Institution,Ithaca,N.Y.). (Commission's reference Z.N. (S) (170). " Ancilla was proposed by Lamarck,1799,Mem.Soc.nat.Paris 1:70.Following the description of the genus is,"Volute...Martini conch.2,p.359,t.65,f.722-724". The species is not cited by name by Lamarck, but it had been named by Gmelin,1792, in Linnaeus,Syst. Nat.(ed.13) 6:3467,Voluta ampla... Volute...Martini 2,t.65,fig. 722-724 (the same reference as that of Lamarck). The species is still regarded as valid. Does not the type species of Ancilla Lam. 1799,then become Voluta ampla Gmelin,1792, by monotypy ?"

The above request for a ruling was answered by a bulletin " On the Type Species of " Ancilla" Lamarck,1799 (Class Gastropoda), a Genus Established with No Cited Nominal Species."

A lawyer might call the solution a " nice" point. Further discussion of the " regles" seems unnesessary, but the conclusion is of interest. Such work of the International Commission should be well received and praised. An excerpt from the Bulletin follows," ... I applied (18th March 1951) to Dr. L.R. Cox (British Museum(Natural History) for information on the question of what was the first nominal species to be assigned to the genus Ancilla Lamarck. Dr. Cox replied on the following day as follows:- " This question seems easily settled. The first nominal species assigned to Ancilla was Ancilla cinnamonea Lamarck,1801 (Syst.Anim,sans Vertebr.:73), founded on Martini,Conch.2,t.65,fig.731. This is therefore the type species by monotypy. It is a Recent Indo-Pacific species belonging to the same group as Voluta ampla Gmelin,so that the change in type species has no effect on nomenclature."

" Ancilla cinnamonea Lamarck,1801 , is the type species of Ancilla Lamarck,1799, by monotypy;(2) placing the generic name Ancilla Lamarck,1799 ,with the above species as type species , on the Official List of Generic N ames in Zoology;(3)placing the specific name cinnamonea Lamarck,1801, as published in the combination Ancilla cinnamonea , on the Official List of Specific Names in Zoology."

****

Oliva paxillus Reeve,1850- Refer to our discussion in Minutes 183, p.23. It is of interest to note that specimens recently received from Majuro,Marshall Islands, N.M. Bouray leg.,Dec.1958, seem to be identical in every character with those from Hawaii and labelled O.sandwichiensis Pease by authors.

ADDITIONS AND CORRECTIONS

Shell Structure of the Olividae- In our comments regarding the forms of Oliva spicata (Röding) in Minutes 184,p.20, we mentioned the fact that there seems to be a very different shell structure in two of the forms. We have searched the literature in our library and found very little on this point. Any additional information will be sincerely appreciated.

The best reference we have is from O.B. Bøggild, The Shell Structure of Mollusks,Mem.de l'Acad. Roy.Sci.et Lettres de Danmark, Copenhagen,1930, as follows," The shells of different forms of Oliva,Olivella and Ancillaria examined by me all show the ordinary structure with three layers. There may,in some instances, be faint traces of an upper,longitudinal layer but it is not formed as a distinct,separate layer. Bowerbank places the Oliva among the gastropods which have three layers of which the middle one has transverse lamellae;there may,perhaps,be other species than those examined by me,which possess,the said upper layer." End quote.

****

Oliva miniacea (Röding) Ref,Minutes 181,p.12 (as O.erythrostoma) and Min.181,p.32.

A set of 12 specimens recently received from Ngatik Is.,E.Caroline Group,J.E/Welch leg.,Dec.,1958, with note," Sandy patches in inner lagoon.Best luck at night during low water. Have found this in deep water (30-40 ft.) during daytime while using aqualung" The specimens in this set are almost identical being of a clear ivory base color with the rather sparce markings being of a predominantly violet color. Interior typical deep orange.

Specimens of this species from Majuro,Marshall Islands,N.M.Bouray leg.,Dec.,1958, are larger and the pattern does not form the bands. These are the variety efasciata Dautzenberg, if color forms are of interest.

Specimens received from Suva,Fiji, ex. R.A. Derrick,Fiji Museum. Typical banded markings, but much more obese than the above lots, or those from the Philippines.

Oliva annulata (Gmelin) 1790. Ref.Min.182,p.9 (as O.emicator) and Min.182,p.33. Set of specimens from Suva,Fiji,Typical. Ex. R.A. Derrick,Fiji Museum.

Oliva bulbosa (Röding) Ref.Min.182,p.6 Set from Suva,Fiji, Ex.R.A. Derrick,Fiji Museum. Of the gray mottled color form,otherwise typical.

Oliva episcopalis Lamarck,1810 Ref.Min.182,p.11. Set from Suva, Fiji. Typical.

Oliva sanguinolenta Lamarck. Ref.Min.181,p.9 Set from Suva,Fiji, ex.R.A. Derrick,Fiji Museum.

Oliva scripta Lamarck,1810 Ref.Minutes 182,p.26
Specimens from Mauke,Cook Islands,So.Pacific, Dashwood leg. This locality is of interest because our other material has been from Ceylon and other localities in the Indian Ocean. The Cook Island shells appear to be identical with those from Ceylon.

Oliva dactyliola Duclos- Ref.Min.182,p.20
Specimens from Lubang,Mindoro,Philippines in the Burch collection have been tentatively assigned to this species.

Additions and Corrections

Oliva athenia Duclos, 1835 Ref. Min. 182, p. 14
The following discussion was not mentioned in our paper on this species. Nils Hj. Odhner, 1917, Results of Dr. E. Mjöbergs Swedish Scientific Expeditions to Australia 1910-1913. The author figures a shell that we no doubt have assigned to the above species, (O. faba Marr.), and we followed Dautzenberg in separating O. sidelia Duclos from this group and considering them another valid species. The discussion of Odhner follows, " ? O. sidelia Duclos (Pl. 2, fig. 58) 42 miles W.S.W., 36 feet (11/7), 1 sp. 1. 11.5 mm; 45 miles W.S.W., 70-72 feet (11/6), 4 sps. max. 1. 11.5 mm. The present specimens closely resemble O. faba Maryat (Sowerby, Thes. Conch., 4, pl. 343, figs. 238, 239). Tryon considers this species as identical with O. sidelia. As the determination of the present specimens, in view of the great confusion of Olividae, is somewhat uncertain, I give a figure of the form here referred to O. sidelia. In colour it is light grayish blue with thin regular yellowish repeatedly angulatedstripes and distant grayish brown twice-bent streaks and some large grayish brown spots beneath the suture (6 on the last whorl); interior white. The fine yellowish fulguration also recalls the more distinct coloring of O. rufofulgurata Schepman (1911, Siboga Exp.). Distribution: China to Viti Isl., and Madagascar (Tryon, 1883)". End quote.

The distribution of this species seems to be rather wide. We have assigned specimens tentatively to this species recently received from Suva, Fiji, ex. R.A. Derrick, Fiji Museum.

* * * * * * * * * * * *

Oliva duclosi Reeve, 1850 Ref. Min. 182, p. 16; 183, p. 23
Nils. Hj. Odhner, 1917, Ref. as given above, discussed this species as follows, " Oliva duclosi Reeve, 45 miles W.S.W., 70-72 feet(1/6), 1 sp.. 1. 13.5 mm. It agrees with Reeve's fig. 45a of O. lentiginosa, which Tryon (Man. of Conch., Vol. V, 1883) declares to be identical with the present species. It has elongated brown spots beneath the suture (5 on the whorl), 1 median and 1 suprafacicular band of spots (Tryon Pl. 32, fig. 17 is very similar).- Distribution: China to Australia, Polynesia and New Zealand (Tryon)."

Oliva scripta Lamarck Ref. Min. 182, p. 26 Odhner lists, " 1 sp. 1. 36 mm. crawling on the shore 16/5 " (from the shores of Broome, Western Australia.)

Ancilla cingulata (Sowerby) Ref. Min. 183, p. 13 Odhner lists, S. of Broome, 1 sh. , 1. 47 mm."

Ancilla monilifera (Reeve) 1864 Ref. Min. 183, p. 17
Odhner discusses this species as follows, " 45 miles W.S.W., 48 feet (5/7) 1 sp., h, 12.5 mm. Agrees in all essentials with Reeve's fig. 36 (Conch. Icon. 15, 1864) but between the series of points is simply white, not reticulated. Reeve's specimen comes from Swan River. Tryon classes the species with A. marginata Lamarck, which is, however, doubtful when we consider the difference in size." End quote.

* * * * * * *

Oliva carneola (Gmelin) 1791 Ref. Min. 182, p. 13. A set of this species has been received from Majuro, Marshall Islands, N.M. Bouray leg., Dec., 1958. These shells are typical in form and color being orange yellow with two white bands around the body whorl. However, both white bands are raised rings. This entire set of six specimens are identical. It would be interesting to know whether or not this entire colony shows this character.

Oliva paxillus Reeve,1850 Refer to our discussion in Min.183,p.23 and this issue,Min.185,p.2. We have received a long series ranging from the very juvenile to the adults of this species from Guam. It is of interest to note that these specimens are identical in all characters with those we have received from the Hawiian Islands, Marshall Islands etc.(the O. sandwichiensis Pease of authors). The shells before us were collected by Mr. and Mrs. Don Hiatt, Jan.1956 to June,1958. The following collecting data by the collectors is of unusual interest," The grey, two banded inside opening Oliva were found in Tumon Bay,Guam, in well piled fine wave washed but not deep sand. The area was 3/4 of the way to the outer edge of the partially exposed reef ending where there was no sand many feet in from the actual wave buffeted reef edge. If I happened to flick the sand aside just before sunset to find one it was frustrating for thereafter I had little chance of finding the usual other one or family it was near. Dusk was not a good time. The water was bath hot in summer,and then they were slower in digging in again after being waved up by a flick of the hand above the sand. They were exceedingly fast at dissapearing in cooler water in winter months. Many had a white cape which made that area not slick, as if it were a partial skin, that could be rubbed off with a thumb nail after the boiling we did to remove the animal. You can see the cape line if you hold the shell to a strong light." End Hiatt quote.

The nature of the " cape" referred to remains a mystery to us, but the line may be seen on the specimens. There is no injury to the enamel nor apparent effect on the color pattern. It would seem as if this " cape" covered the entire apex running diagnally down on the body whorl/

Oliva annulata (Gmelin) ,1790. Ref.Min.182,p.9 & 33,Min.185,p.3. A long growth series of this species collected by Mr. and Mrs. Hiatt in Tumon Bay, Guam. The specimens are typical, but it may be of passing interest that the specific characters remain apparent on the juveniles of not over 7 mm.

Genus Olivella Swainson,1831 Zoological Illustrations,ser.2,vol. 2,expl. of pl.58 (Oliva pl.2)
Type (by subsequent designation, Dall,1909,U.S.Geol.Survey,Prof.Pap. 59,p.31) Oliva purpurata Swainson(= O. dama Mawe) Recent-West Coast of Mexico.

Is a variation in the radula sufficient ground upon which to place a species in another genus, removing it from other species which possess many identical and related characters ?
The value of radular studies in classification is beyond question, and we cheerfully accept the fact of interesting variations in radular characters, but we suggest here that we study the radula as another character rather than the final conclusion.
We are now engaged in a study of the Olividae. Dr. Axel A. Olsson has published some very thorough studies in the genus Olivella, and has removed some species from that genus on the radular basis. Olsson has also divided the species with which he worked into numerous subgenera. His work has met with general approval, and his divisions seem to form recognizable groups.
However,in a general discussion of world wide species it seems that the logical proceedure is to list them in alphabetical order following the type species.

Olivella (Olivella) dama (Mawe),1828 in Wood,Index.Test.,Suppl., p.11,pl.4,fig.37, as Voluta dama Mawe.
Oliva dama (Mawe), Duclos,1835,Mon.Oliva,pl.3,figs.5,6-Marrat,1871, Thes.Conch.,vol.4,Oliva ,p.30,pl.22(349),figs.368,369- Reeve,Conch. Ic.,63,a,b.
Oliva purpurata Swainson,1831, Zool.Illust.,ser.2,vol.2,pl.2(58),f.1
Oliva lineolata Gray,1839, Zool.Beechey's Voyage,p.131
Olivella dama (Mawe), Carpenter,1857,Mazatlan Cat.,British Mus., p.471- Carpenter Rept. 1856,p.262,339- 1863,p.548,625
Proc. U.S.N.M. vol.17,p.175- Mem.San Diego Soc.Nat.Hist.,vol.1, p.626- Proc.Acad.Nat Sci.Phil,vol.84,p.112-Trans.San Diego Soc. Nat Hist,vol.8mp.30 (lists)- Sm.C. vol.98,vo.10,p.16 Socorro Id.

Carpenter,Mazatlan Catalogue,No.600 describes the species," This shell is remarkable for its rich gloss,elevated spire and yet stumpy growth,rich violet within the mouth, and great twist of the columella within the mouth,not visable from the front view.The long spire is nearly covered with a thick enamel; and the body whorl is painted with olive brown,orange or faint gray,leaving a white pattern more or less triangulated, with long infrasutural lines. The labrum is not often found quite perfect, and is much advanced in the middle. Long..95,long.spire .44,lat..38,div.50%." End Carp.quote.

Tryon,Man.Conch.,p.71,pl.17,fig.39," Spire and fasciole yellowish white,the former ash-tipped, the latter sometimes bearing a band of chestnut maculations,body whorl long-fasciculated at the suture and closely reticulated over the balance of the surface;interior of aperture and columella violet. Length .6-1 inch. Guaymas,Mazatlan." End Tryon quote.

Reeve, Conch. Icon.,Oliva, pl.23,species 63, describes the species as O. lineolata ," Shell acuminately oblong,thick,spire much exserted,callous,columella arched,somewhat obscurely many-plaited and laminated at the base;fawn-white,streaked and reticulated beneath the suture with brown lines, base unspotted,columella and interior of the aperture deep violet purple...The network of this species descends in rather long lines from the sutures/The columella and interior of the shell are well distinguished by their rich violet purple coloring." End Reeve quote.

Olivella (Olivella) dama (Mawe) -con,

Axel A. Olsson,Studies on the Genus Olivella,1956,pp.176-177, discusses the species as follows," Shell of medium size (average length 18-20 mm.) stout,with a spire nearly the same length as the aperture. The wide fasciolar band encircling the base is white or yellow,and contrasts with the obscure,brownish,sometimes faintly zigzag pattern of themain surface, the sutures more deeply stained. Enamel of the spire whorls rather heavy,white or plain except for the edge of the sutures which are brown,marked with firbriated lines. Apex of spire generally violaceous. Inner lip with a large,pillar fold below,followed above by a few small plaits which do not extend above the middle line,the parietal callus lightly violaceous.Outer lip often brown within. Pillar wall excavated....Radular ribbon essentially that of O. nivea but smaller,its length about 2 mm., width .67,width of each rRachidian tooth about 3 mm. Rachidian tooth curved,bow-shaped,with about 24 cusps,the medial pair large. ...This species was well figured by Swainson,as purpurata, so named in allusion to its purple colored aperture. It is apparently common along the Mexican coast. Fossil in the Pleistocene of Lower California. Range- Lower California and the adjacent coast of Mexico proper." End Olsson quote.

Keen,Sea Shells of Tropical West America, 1958, p.424,fig.634, discusses as follows," This is the type species of the genus. It is a stout little shell,white,variably marked with faint zigzags of brownish or grayish color,the apex of the spire and the aperture being violet. About 20 mm.in length and 9 mm.in diameter.The head of the Gulf of California, where it associates with Oliva incrassata on the outer sides of sandspits,along the West Mexican coast at least as far south as Mazatlan." End Keen quote.

Distribution and comment- It has been our priviledge to study the very large series of this species collected by Mrs. Dorothy Brown. The various collecting stations indicate a number of recognizable races. Some lots are more slender with a proportionately higher spire.Accepting a standard that the spire is about equal to the length of the aperture, it is interesting to note that certain colonies vary in each direction. The main surface of the shells seem to be fairly constant in each colony,but the numerous lots range from light yellow to very dark. One uniform character is that all have the violet aperture, and the violet blotch on the parietal callus. The apex of the spire is violet on most of them, but does not seem to be a constant character. The fasciolar band encircling the base varies in width and in color from white to yellow. Some of the colonies will be described below with the measurements of the shells indication an approximate average in proportions.

Puerto Penasco,Mexico, Nov.1955 & Nov. 1956- Length 19 mm,Aperture 11 mm,Spire 8 mm. Light in color,yellowish horn. Entire shell more slender in proportion to most sets.

EnsenadaBBaLca, 5 mi. N. of San Felipe,Baja Calif.,Dec.28,1957 Length of shell 18+ mm, Aperture 10+ mm, Spire 8 mm. Light color.

San Felipe, Baja Calif.,Beach in front of the hotel,Feb.1957 Length of shell 18+ mm,Aperture 10+ mm,Spire 8 mm. Color tending toward yellow.

Percy Voux, 22 Mi. S. of San Felipe,Baja,Calif.,Feb.,1957 Length of shell 21 mm, Aperture 11 mm,Spire 10 mm. Light shade but entire shell more robust than the above.

Puertocito,Baja Calif.,May,April,1958 Length 19+ mm,Aperture 11+, Spire 8+. Similar in color form to above. (con.)

Olivella dama (Mawe) - con.
San Francisquito Bay, Baja Calif.,May,1958, Dark colored, large with comparatively lower spires. Length of shell 25 mm, Aperture 14 mm, Spire 10+ mm, The majority of the specimens average in this proportion.

Other sets of this material in the Burch collection may be worthy of note. A large set from Los Angeles Bay, Mexico probably selected for size being the largest before us and all ranging from 25mm to as much as 27 mm.+. Another set of very large specimens from La Paz. Numerous sets from Guaymas,Sonora,Mexico-Guaymas,mouth of laguna and front of the Miramar, Mrs, John Q. Burch,Jan.,1948; South Empalme Sonora,Mrs, John Q. Burch, Jan.,1948. Several sets from Mazatlan, Sinaloa,Mexico. Set from San Francisquito, ex Mrs. Faye Howard, May,1957.

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Publications Received

Abbott, R. Tucker, The Marine Mollusks of Grand Cayman Island, British West Indies, Monograph Acad.Nat.Sci.Phil.,no.11,1958 138 pages, 5 plates.

This is a carefully written work. When the nomenclature has been altered the synonymy is given with a clear explanation.The omission of such data by many authors is often puzzling and annoying.A full discussion of the treatment of a number of groups and the new species described will not be attempted here. It is certain that all serious students will wish to add this work to their libraries. The price is stated at $4.00 postpaid, from the Academy of Natural Sciences of Philadelphia,Nineteenth and the Parkway,Philadelphia 3, Pa.

Dr. Abbott has stated a conclusion regarding the systematics of the Muricidae with which I have been forced to concur regardless of the fact that this finding largely nullifies the paper I read at the A.M.U.P.D. meeting at Stanford in 1955 and published in Minutes 149, pp.3-13. This will be apparent from the discussion that follows.

Murex margaritensis Abbott,1958 New name for the species generally known as *Murex imperialis* Lamarck. The author calls attention to the fact that the latter name is a homonym of *imperialis* Fischer, 1807. The possible importance of this species is that it is the type of *Phyllonotus* Swainson,1833 (by monotypy). The remarks of Dr. Abbott will follow in part," In recent years this species from Isla Margarita, north coast of South America, has been synonymized with *pomum* Gmelin. It differs,however,in several important characters : it has 5 (rarely 6 or 4) varices per whorl (instead of 3 or 4 as in *pomum*), is proportionately wider with a shorter and broader siphonal canal; the latter bears one (rarely a second smaller) row of spines between the lower part of the varix and the end of the siphon,while in *pomum* there are generally two well developed rows; there is usually one quite large nodule between the varices, while in *pomum* there are 2 to 4 smaller ones. The parietal wall is pale pink to pale yellow and lacking the concentrated brown patch at the posterior siphonal notch.....I have two specimens of *M. margaritensis* (ANSP no.56079, R. Swift,Margarita Island) which have broad brown splotches on the parietal wall similar to those found in *M. regius* Wood from the Eastern Tropical Pacific. The latter has about 7 varices per whorl which bear open spines and have no intersticial nodules...

I believe it is very unwise to accept such names as *Phyllonotus*, *Chicoreus* etc. on a generic level, and perhaps not even on a subgeneric level,because of the very nebulous characters which seem to appear in random combinations throughout the many recent and fossil species of *Murex*. The open foliated spines of *Muricanthus* (*regius*,*radix*,*erythrostomus*,*fulvescens*,etc.) are well developed in some specimens of "*Phyllonotus*" *pomum* from the West Indies. With regard to varices per whorl, they overlap from one species to another (none to 7). The radulae are of no better use.

The genotype of *Muricanthus* (*radix* Gmelin) is not very different conchologically from the genotype of *Hexaplex* (*foliacea* Perry 1811 = *chicoreus* Gmelin 1791). There are species which completely bridge the gap in their so-called generic characters,so that we are prone to abandon *Muricanthus* as a good subgenus." End Abbott quote.

In conclusion, I may add that the receipt of many large specimens of this species from Porlomar,Venezuela made this problem obvious. My statement that the species did not possess open foliaceus (con.)

varices was in error. Many of them do have them. Five or six varices are not uncommon. Large specimens of a size comparable to the species of the Pacific frequently have the color markings of M.regius ,while others have the deep rose apertures associated with M.erythrostomus. There is no question of a confusion of the species, but a serious question of whether this species is separable generically or sub--generically from others including those from the Pacific.

Unfortunately, the same problems seem to be present in other groups of this family. We prefer to follow Dr. Abbott in the use of the time honored Genus Murex Linne' 1758. A final quote from Abbott will suffice," There are species which completely bridge the gap in their so-called generic characters."

Axel A. Olsson and Thomas L. McGinty- Recent marine mollusks from the Caribbean coast of Panama with the description of some new genera and species- Bulletins of American Paleontology, vol.39,no. 177, Paleontological Research Institution,Ithaca,N.Y. Dec.1958 58 pages, 5 plates.

An interesting paper because so little seems to be available on this fauna. We have a great many publications on the fauna of the Pacific side. The many new species and genera are well figured and clearly described.

Bulletin of the Southern California Academy of Sciences- Vol.57, part 3,Sept-Dec.,1958. Among other papers this issue contains two on mollusks.

A Scalariform Micrarionta from Baja California Norte,Mexico by Robert J. Drake. This unusual form of Micrarionta (Plesarionta) stearnsiana (Gabb) was collected by Mr. Emory P. Chace of the San Diego Museum of Natural History, and is well described by Mr. Drake including one full page plate.

Morphology of the Common Mudflat Snail-,Cerithidea californica by Donald Bolton Bright. This is a quite thorough diagnosis of this well known species- pages 127-140,5 plates.

Journal of the Malacological Society of Australia, No.2,Nov.,1958

Notes on the Anatomy of the Australian Volutes- ,bednalli and grossi by R. Tucker Abbott- pages 2-7, 3 plates. An interesting paper on these fine species.

Western Australian Cowries by Bernard C. Cotton. Pages 8-19,4 plates. This is an attractive paper and well written. Of course, there may be some who might have hoped to group a few, but it seems as if each species is honored with its own genus and perhaps subfamily.

Further Victorian Opisthobranchia by Robert Burn,

Movement by commensal Hipponix conicus (Schumacher) by Thelma Hartley

A note on the Microtis in Australia by Robert L. Talmadge

A new tree snail from North Queensland by Donald F. McMichael

Cymbiola sophiae (Gray) from the Arafura Sea, by Takashi Okutani

Zoila rosselli Cotton by Thelma Hartley

Some species of the Lamellariidae (Class Gastropoda) from the Eastern Australian coast by Joyce Allan.

Tasmanian Intertidal Mollusca by Ron C. Kershaw

This Journal is a well printed contribution-105 pages,numerous pls

Proceedings of the Philadelphia Shell Club- Vol.1,No.3,Oct.,1958 As expected this is another good issue. Contains with others- Molluscan Road to Zanzibar by Virginia Orr; Rare Shells by Anthony D'Attilio;Molluscan Diary of Doc Bales by R. Tucker Abbott. Notes and news- list of members etc.

Venus- Japanese Journal of Malacology, Oct.1958. vol.20,No.2.
Those interested in subscribing to this excellent journal may do so by mailing $2.00 (or British 14s.) to Dr. Tokubei Kuroda, Zoological Institute,Kyoto University,Kyoto,Japan.
The papers are largely in English or in both English and Japanese.
The titles in this issue follow:

The Japanese species of *Primovula* Series of the Amphiperatidae by Tokubei Kuroda
Descriptions of 5 New Bivalves from Japan by Tadashige Habe
Descriptions of 3 New Species of the genus *Rectiplanes* by Tadashige Habe.
Notes on Gross Anatomy of *Concocele disjuncta* by Massao Nakazima
On the differentiation of *Stomach of Pelecypods* by Massao Nakazima
Studies on molluscan larvae by Yataroh Tanaka
Notes on shells collected off Tanagashima by Soyo-Maru
Variation of *Angaria delphinus atrata* (Reeve) by Sadao Kosuge
Luminous *Baeteria from alimentary* canals of Marine Gastropods by Shigeo Yoshiba

The following papers by Dr. Bengt Hubendick:
A note on the taxonomy of the Brazilian vector snails of "Schisto-soma Mansoni" Rev.Brasil.Biol.18(1)37-40,1958
The development of the penial stylet in *Gyraulus* (Moll.Pulm.) Arkiv. For Zool.,Serie 2,Band 11 nr 24,1958
A note on *Protancylus* P. & F. Sarasin- Beaufortia,No.78,vol.6,1958
A possible method of Schistosome-Vector control by competition between resistant and susceptible strains. Bull.Org.mond.Sante,1958
Intraalascutrine Speciation among Ancylidae in Lake Ochrid- XVth Int.Cong. of Zool.,Sect.II,paper 7.

A number of large papers by Adolf Riedel, from the Annales Zool., Polska Akad.Nauk,Warsaw,Poland,1957.
Revision der Zonitiden Polens- pp 360-464,numerous text ill.
Six papers on species of *Oxychilus*
Three papers on *Retinella*

From the journal cited above- paper by Stanislaus Feliksiak,1950
Anamalies and deformations of the genital organs in *Helicigona*

Three papers by Ewald Frömming- Berlin Well illustrated papers on the land and freshwater fauna- In the German language

Bibliography,Cartography,Discovery, and Exploration of the Islas Revillagigedo by Adrian F. Richards and Bayard H. Brattstrom. Proc. Calif. Acad. Sci/.Jan.5,1959.
This is not a paper entirely devoted to mollusks. This is obvious. Nevertheless it is of unusual interest. All of the early voyages are listed with dates, and there are references to a surprising number of authors on the mollusks of these islands.

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Allyn G. Smith of the California Academy of Sciences phoned from the airport between planes last week. He was on his way to spend a month collecting in Mexico. We hope to see the loot on his return.

We enjoyed having Walter Eyerdam of Seattle and Mr. and Mrs. E. Stiles of Bellingham as our house guests for several days on their way south to spend the winter in Mexico.

Dr. Don Shasky is flying down to Guaymas for a collecting trip.

Come on- what are we waiting for ?

Minutes of the Conchological Club of Southern California
Jan.6,1959

The meeting was called to order at 7:35 P.M. by the President,Dr. Donald Shasky. The minutes of the meeting of Dec.2,1958 were read and approved,and the program for the evening,a discussion of Dr. A. Myra Keen's new book " Sea Shells of Tropical West America" was gotten under way.

Dr. Donald Shasky reported upon 25 different kinds of gastropods in his possession that represented extensions to the geographical ranges given by Dr. Keen in her book.These new records were obtained by collecting at San Felipe,Puertocitos, and San Luis Gonzaga Bay on the peninsula side of the Gulf of California and at Puerto Penasco Guaymas,Yavaros, and Las Bocas on the mainland side. He had collected 14 of these personally,while two had been taken by friends, and nine by shrimp boats.A specimen of each was displayed by Dr. Shasky. These will be reported upon fully in the Minutes of the Conchological Club at some future date. Mrs. Rose Burch added one extension of range that she had collected.

Mr. E.P. Chace reviewed the bivalve section of the new book after reporting that he felt the introduction was very worthwhile and should be carefully read by all. His discussion of the bivalves followed the sequence of the book and was highlighted by his expression of opinion that Solomen megas was distinct from Solamen columbianum . He based this opinion upon a first hand examination of material of both species. Dr. Keen had placed megas in questionable synonymy with columbianum. Mr. George Kanakoff suggested that it always pays to look at the paleontological recordwhen insuffient living material is at hand. This was offered as worthwhile advice not as a criticism of the book.

Mr. Crawford Cate reported upon the Muricidae and Terebridae. He~~s~~ expressed concern over the rapidity with which scientific names are changed by various workers necessitating label changing on all affected items in collections. Name changes he specifically singled out were Hexaplex for Phyllonotus and Muricanthus callidinus for for Murex nitidus of Reeve.

Mr. John Q. Burch reviewed the Olividae and pointed out that it would be difficult for him to resign himself to using the genus Oliva instead of Olivella for undatella. His discussion indicated that a lot of work must still be done before all of the relationships of the various olives can be clearly understood.

Mrs. Rose Burch went over the sections on Conidae and Cypraeidae. She displayed specimens of all but one of the cones in Dr. Keen's book (Conus drangai was missing) and all of the cowries. Two of her cones were from Clipperton Island. Among the cowries ,Cypraea annettae was singled out for special attention because it sometimes has a slipper limpet or Crepidula living on it.

A 15 minute break was held from 8:30 to 8:45 during which the 48 members and guests who were in attendance had an opportunity to examine the shells displayed by the speakers and a beautiful display of land shells brought by Dr. Wendell Gregg.

After the break some of the members and guests were introduced and Dr. Shasky asked about the once active " Lost Operculum Club", a segment of the Conchological Club.For membership to this exclusive group one must have in his possession a shell that measures larger than any of the same kind owned by any other member of the organization. It was decided to reactivate the Los Operculum Club and Dr. Shasky volunteered to be editor for any records applicable to shells taken south of Cedros Island on the outer coast of Lower California. There were no volunteers for a similar editor for (con.)

shells taken north of Cedros Island.

Dr. Shasky introduced his various committee chairmen for 1959 and these as called upon for reports were:
Crawford Cate-program and displays
Dorothy B rown- field trips
John Q. Burch- literature
Ruth Shasky- door prize
Rose L. Burch-hospitality

Door prize winners were Mrs. Dorothy Grafton,John Q. Burch,Miss Sandra Delp,B art Bolin,Mrs. Edith Welden, and JoAnn Bray.

John Fitch announced that the 1959 meeting of the American Malacological Union,Pacific Division will be held at the University of Redlands July 9 through 12th. Full details will be disseminated in the near future.

The meeting adjourned at 9:40 P.M.

John E. Fitch,Secretary.

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Review of Palmer- Carpenter Types continued from page 1

The extensive account of Carpenter's life and work necessarily involves a historical account of the conchology of his time adding valuable information about the work of other authors and collectors.

Inclusion of the known stratigraphic distribution of the species is of very great interest. The records are shown from the Miocene, Pliocene,Pleistocene, and Recent.

The careful systematic diagnosis of each species is a pleasure to study. To be true, we must accept some changes, but the basis for these is so thoroughly discussed that the student of taxonomy will find all points of view covered.

An example may be the acceptance of Pecten(Chlamys) rubidus Hinds,1844 (= P. hindsii Carpenter,1864), p.69, pl.3,figs.4-6.

The many problems solved in this book make a list far too long for proper mention in a review such as this must be.

This neat cloth bound book of 376 pages, and 35 photographic plates should be indispensible for the book shelf of all serious students in this field/

Orders should be mailed to the Geological Society of America, 419 West 117 St.,New York 27, N.Y.

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The Long Beach Shell Club

This group continues to be active and it is always a pleasure to attend their meetings. They meet on Sunday afternoons, once each month, and all shell collectors are cordially greeted. The officers for this year follow, and if possible you should write and attend their meetings.
Mr. E.P. Baker, 11617 S. Downey Ave.,Downey,Calif.-President
Mr. Lawrence Neff- Vice President and Program Chairman
Mr. Ralph Bormann-Sectretary-Treasurer
Mrs. Eugene Wilkins- Librarian
Mrs. Ralph Bormann- Historian.

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We have a note from Miss Bernice Leland of Eugene,Oregon telling us that Miss Hariett Thompson has been ill. However, it is a pleasure to report that she is now improving.

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We have an interesting letter from our former fellow townsman and shell enthusiast, Dr. Rudolf Schindler. Dr. and Mrs. Schindler are happy in their new location-Rua de Espanha 626, Santo Antonio,Belo Horizonte,Minas,Brasil.

AMERICAN MALACOLOGICAL UNION

Tentative plans for the 25th meeting have been received.

Meeting to be held in Philadelphia,June 30(Tues.) through July 3 (Friday),1959.

Both housing and meetings will be held at Haverford College

The proposed schedule follows:
Tuesday 9.00 A.M. Haverford College Campus
Registration;Meetings in the afternoon.
Wednesday-Haverford College; meetings
Thursday morning-Haverford College-meetings
1:30 P.M.-Academy of Natural Sciences of Philadelphia-Shell Exhibits- Guided tour of Department of Mollusks
3.00 -4:30 P.M. Afternoon Tea in Exhibit Hall
6:30-7:30 P.M. Cocktails
7:30 P.M. Banquet(Academy Auditorium)
Friday- Cape May Field Trip
Snow Clam Canning Company
Collecting
Luncheon picnic

There are many other interesting affairs mentioned in the paper at hand.

Needless to add, we all wish that it were possible for us to attend. Unfortunately, the cost of time and transportation to span our continent remains an obstacle for most of us. Nevertheless, it is hoped that a representative delegation from this coast will meet in Philadelphia/

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MAR. 1959

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

News of shells and shell affairs should be mailed to the editor,
John Q. Burch,
4206 Halldale Ave.,
Los Angeles 62, Calif.
Phone Ax 3-5710 or Ax 2-7965

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The American Malacological Union- Annual Reports for 1958
The new bulletin is at hand and is certainly a credit to the organization. The secretary, Mrs. Margaret C. Teskey should be sincerely congratulated for arranging such an excellent report.

Abstracts of the papers read at the meeting of the AM.U. at Ann Arbor, The Twenty-Fourth Annual Meeting and also of those read at the meeting of the A.M.U. Pacific Division held at the University of California are well presented.

The group pictures of both meetings are included, and the membership list revised to Dec.31,1958.

It would seem that all persons in any way interested in the study of mollusks should certainly be members of the national organization dedicated to this work.

The annual dues are but $2.00 for a single person or $3.00 for husband and wife. Your check and application for membership should be mailed to Mrs. Margaret C. Teskey,P.O. Box 238,Marinette, Wisconsin.

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Oliva rubrolabiata H. Fischer,1902 Description D'Un Oliva Noveau Provenance Des Nouvelles Hebrides- Journ. de Conchyl., L, pp.409-410, pl.viii, figs. 12 et 13.

We have been uncertain about a proper assignment of this species. However, in working through the collection of the California Academy of Sciences we found a set of two specimens-Cal.Acad. No. 27876. The specimens had been placed with Oliva maura = Oliva oliva Linne'. This would seem logical from form alone. However, the folds on the columella are much more numerous and run the length of the columella to the suture. In addition both the columella and the edge of the outer lip are of bright crimson. The body whorl is dark brown banded with light close concentric bands. The two color figures of the original description are excellent and unmistakable. The Cal. Acad. specimens came from the correct locality, New Hebrides, and match the figures perfectly. We are admitting the species as valid and separable. The description of the author in French follows. The Latin may be preferable to a poor translation.

"Testa 46 millim.,alta 22 millim,,1/2 lata, nitida,crassa,ovato-cylindrica,basin versus vix attenuata.Spira brevis conica.Anfractus ultimus prope aperturum leviter ascendens,totem longitudinem testae fere aequans;sulcus subsuturalis sat profundus sed angustus; supra sulcum callus obscurus,nitidissimus,usque ad suklcum praecendentis anfractus ascendit;anfractus 6 leviter concavi,sulco subsuturali produnde discreti.

Apertura superne angulata et emarginata,in media regione leviter contracta,inferne paululum dilatata. Labrum crassum,paulum arcuatum, Margo parietalis callo valido, in regione columellari dilatato, superne incrassato,instructa; in codem callo plicae praecipae circiter 17 conspiciuntur, quarum 4 infernae,longae,regionem basaluem et dilatatam calli occupant. Plicae aliquot minores sparsim occurunt. Color anfractus ultimi sericinus;fasciae spirales fusco-cinerae,inaequales,numerosae,intervallis angustis pallidioribus discretae,superficiem ornant. Prope callum columellarem,fascia inferna,fere nigra,lata,occurit. Spira pallidor,maculis subregularibus infra et justa sulcum subsuturalem ornata. Labrum callusque supernus ruber;plicae paritales rubro tinctae;faux aperturae albida.

Desc. du type-Coquille ayant 46 mm de hauteur et 22 mm 1/2 de largeur maximum,luisante,epiasse,ovale-cylindrique,s'attenuant tres peu vers la base.Spire courte,conique.Dernier tour occupant presque la totalite de la hauteur de la coquille,ascendant au voisinagede l(ouverture,presentant a' 2 mm environ au dessous de la suture, un sillon subsutural profond mais etroit,comme chex Oliva erythrostoma Lam/ .. H abitat, ile Mallicolo (Nouv.-Hebrides)

Rapports et differences- C 'est de la Oliva erythrostoma que la nouvelle espece se rapproche le plus. Elle presente notament une conformation indentique des tours de spire;mais elle s'en distingue par l'epaisseur beaucoup plus forte de la callosite du bord,parietal qui fait saillie dans l'overture jusqu'au sommet de cette derniere et presente sur toute son etendue des plis developpes,tandis que chex l'O.erythrostoma meme bien adulte,ces plis deviennent graduaellement obsoletes vers le haut. La presence des bandes d'un gris brun sur fond grisatre plus clair,ainsi que la coloration rouge-vermillion du labre et des plis oarietaux donnent a' cette nouvelle espece un aspect tout special."

Oliva rufofulgurata Schepman,1911 Prosobranchia of the Siboba Expedition, Part IV, Leiden,1911.

This species was mentioned in our discussion of Oliva athenia Duclos, Min. 185, p.4. However, a more careful study of the original figures and description leave us disposed to admit the species tentatively as a separate species. We have seen no specimens that match them. The complete description follows.

" Oliva rufofulgurata Schepman,1911.
Schepman. Tidschr. Ned. Dierk. Vereen (2),vol.VIII,p.67
Stations- Bay of Bima, near South fort.55 M. mud with patches of coral sand-- Atjatuning, west coast of New Guinea, 57 M. 1 spec.-- Between islands of Wowoni and Buton,northern entrance of Butpn-strait,75-94 M, Sand with dead shells 7 spec.-- Nuhu Jean, Kei-islands, 90 M, sand,coral and shells, 3 spec.

Shell cylindrically oblong,slightly inflated near the upper part of last whorl, very glossy, smooth, yellowish, with narrow,rather distant,rufous fulgurations, leaving a narrow pale zone without markings, below the suture.Spire short,conical, apex blunt, the nuclear whorlsrose colored in fresh specimens. Whorls 7, rounded, post embryonic ones callous, with faint traces of the rugous streaks. Sutures widely chanelled. Aperture oblong, narrow and chanelled above becoming gradually wider below, the upper angle narrower by a callosity on the body whorl.Interior light violet. Outer lip rather sharp and curved above, thick and nearly strait near the middle and below. Columella lip slightly callous in adult specimens, with about 25 folds of which the upper 17 are rather short, the lower ones nearly reach the shallow basal sinus. Alt. 22, lat.14 1/2, aper. apt. 17 1/2, lat. 2 1/4 Mill.

This nice new species is by its peculiar color pattern, quite different from any known species. O. rufula ,which has about the same shape, has brown markings of a totally different character. The relatively large number of specimens, from different localities may plead for its validity." End quote.

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Oliva dubia Schepman,1911 Prosobranchia of the Siboba Expedition, Part IV,Leiden,1911, page 252, pl.s 18, fig.2;pl.22, fig.2.

We have assigned this species to the synonymy of Oliva bulbiformis Duclos, but with some reservations having seen no specimens from the immediate locality of Schepman's shells. However, both the figures and description make it difficult to do otherwise.We are adding the complete original description for the record.

" Schepman.Tidschr. Ned. Dierk.Vereen(2),vol.VIII,p.68
Stations-Madura-strait,56 M , mud with some radiolariae,8 spec.; West of Kwandang-bay entrance, 72 M, fine mud with sand, 1 spec.; North point of Nuhu Jaan, Kei-islands, 90 M, sand,coral & shells, 1 spec. " Shell small,cylindrically oblong, slightly narrower towards the base,very glossy, smooth,yellowish brown,with more or less waved rufous lines, and on the last whorl a series of distant brown blotches, bordering the suture. Spire rather high,convexly conical, with a very blunt rosy apex. Whorls 5 1/2, the nuclear ones nearly flat,slightly callous.Sutures deep,widely chanelled. Aperture oblong, rather blunt at the upper part,gradually enlarged below, with a large canal above;interior violet, outer margin nearly straight,moderately thickened, basal sinus wide.Columellar lip smooth above, with about 7 plaits towards the base. Alt. 13, lat 4 2/3, aprt.alt. 10 1/2, lat/ 1 1/2 mm. ..I have named this shpecies dubia ,because it has a somewhat juvenile appearance,as however,the specimens of the three localities vary little in shape and size, it may be that no larger specimens exist." End quote.

Oliva concavospira G.B. Sowerby,1914 New Mollusca of the genera Pleurotoma (Surcula),Oliva, and Limopsis from Japan, Ann.Mag.Nat. Hist.,1914, pl.18, fig.2.

The sunken spire of this species seems to be a consistent character. There is an excellent color figure of the species giving both views in the recent book by Tetsuaki Kira,Coloured Illustrations of the shells of Japan, p.63, pl.31,fig.6.

Sowerby's original description in Latin is given below for the record, " Testa oblongo-cylindracea,crassa,straminea,lineis abgulatim undulatis longitudinaliter ornata;spira concavo-depressa, callosa;sutura anguste canaliculata;apertura mediocriter lata,intus pallide caeruluscens;peristoma crassiusculum,postice acute elevatum;cokumella ubique crassi-plicata,calle postico elevato. Long.35, maj.diam. 19 mm. Hab. Loo Choo....This species exhibits a very unusual character, the spire being sunk in a concavity below the shoulder of the body whorl." End Sowerby quote.

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Oliva andamensis Bridgman,1909 Proc.Mal.Soc., vol.viii,1909,p.297, 2 text figs. Description of a new species of Oliva from the Andaman Islands.

We are placing this species in the synonymy of Oliva carneola (Gmelin), Ref. Min.182,p.13. It seems to be at best another color variation. Nevertheless, the name has been used by authors and for the record we include the reference and the complete original description. The assignment to synonymy may be contraversial, and if we are in error it will be our pleasure to stand corrected. One of numerous citations may be the following by Maxwell Smith, Nautilus 26:77,1912, in which the species is listed from Aden with figure pl.IV, fig.7 and comment as follows," The four examples before me agree perfectly with those in the British Museum, which were taken at the Andaman Islands." End Smith quote.

The original description by Bridgman follows," Shell cylindrical with the outlines a little curved, yellowish,copiously covered with angular clouded purplish-brown markings which often coalesce forming a kind of reticulation. This is sometimes (but not always) suddenly interrupted toward the labrum leaving a plain yellowish tract or space entirely or almost without markings. The acute sutural margin of the body whorl is marked with spots or short lines of a purer and darker brown color,which also are visible upon the upper whorls when not hidden by a callous deposit which invariably covers the spire. This is shortly conical,yellowish,and without markings,excepting the sutural spots or lines already referred to. The apex is usually of a lilac tint. Whorls 7, the three apical a little convex,the three following obliquely flattened, the last marked off by a narrow chanelled suture; labrum a little thickened, generally pale or purplish white at the edge;aperture rather narrow, purplish;upper half of basal fasciole yellow,lower half marked with short brown lines forming an oblique band;columella with a defined white callus bearing about 15-18 transverse lirae.These are much more evident in some specimens than in others,and four of them are produced over the end of the whorl, the uppermost forming the margin of the callus,which is almost white or faintly tinted with pale red anteriorly. Length 21, diam. 10 mm.Andaman Islands...In many respects this shell is closely allied to certain varieties of Oliva carneola and O. todosina Duclos, and in fact is separated almost exclusively by difference of color and locality/ The typical forms of carneola exhibit transverse banding,a feature not yet observed in the present species from the Andaman Islands." End Bridgman quote.

Oliva ceramensis Schepman,1911 Prosobranchia of the Siboba Exped., Part IV, Leiden,1911. pl.18,fig.3; pl.22, fig.3.
Schepman.Tidschr. Ned. Dierk. Vereen (2), vol. VIII,p.68

We are placing the species in the synonymy of Oliva carneola (Gmelin) , but Schepman's complete description is included for the record.

Sta. 174. Waru-Bay,North coast of Ceram, 18 M.Mud, 5 spec.
" Shell small,cylindrically ovate,slightly swollen near the upper part,smooth,glossy, with concentric grey and yellow zones,marked by a purple brown network, with darker triangular spots. Spire very short,apex dark brown,spire quite or nearly concealer by a callous deposit. Number of whorls unknown on account of the callosity. Sutural channel wide but not deep.Aperture oblong,nearly straight above and near the middle,curved and widened below,chanelled in the upper angle. Interior dark purple brown; outer margin very thick slightly curved at the extremities;basal sinus rather narrow and deep;columellar margin straight above,strongly curved below,with about 18 folds,upper ones coarse and short,followed by 3 folds, which are much stronger and prominent,those near the sinus are again very small. Alt.14, lat. 7 1/2; apert. alt. 11 1/2; lat. 1 1/2.
By its shape and size this species is allied to the preceding one, but its color is quite different from any variety of carneola."
End Schepman quote.

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Oliva panniculata Duclos,1835 Monog. G. Oliva,pl.15,fig.15,16
Duclos, Ill.Conch/, p.12,pl.6,fig.15,16
Ducros de St.Germain,Rev.Crit.,p.64
Marrat, Thes.Conch. IV,p.10, pl.6,figs.83,84
Weinkauff,Conch.Cab.2,ed.p.84,pl,22,figs. 10,11,12-Madagascar
Weinkauff,Cat/ Gen.Oliva ,Jahrb.,d.D.Mal.Ges.,V,p.118,Madagascar
Sowerby,Cat.Mar.Gastrop.p.12
Dautzenberg,Liste prelim. Moll.Mar. Madagascar,J. de Conch.,LVIII,30

Dautzenberg, Journ. de Conchyl.,vol.71,1927 in Olivides De La Nouvelle Caledonie.. comments on the species as follows-trans.from the French- " The pattern type of O. panniculata represented by figures 15 and 16 of Duclos, is composed of sharp longitudinal lines, very fine, of a light fawn. The last whorl is crossed , a little below the middle, by a narrow band of gray spots of the same color under the suture. Figure 17 of Duclos represents a form slightly more slender, and figures 19 and 20 an example in which the last whorl is crossed by two decurrent gray bands.
Marrat has figured under the nameof O. panniculata an exceptionally large shell and ornamented with a highly colored pattern.
Distribution-New Caledonia (Rossiter);Lifu(R.P.Goubin,Letellier); Manne,Seychelles (Cherubin)." End Dautzenberg quote.

Tryon,Man.Conch.,Oliva, pl.32, figs. 24,25, p.86 states," White, with faint longitudinal zigzags, and interrupted narrow bands at the suture and below the middle. Length, .75 inch." End Tryon quote.

Reeve, Conch. Icon.,pl.26,species 77 describes as follows," The Silk-Clad Olive- Shell oblong,rather swollen around the upper part, spire exserted, columella plaited throughout;ivory white,very faintly wave-clouded with purplish brown,marked round the middle and beneath the sutures in square dots...Very faintly marked, but well characterized by its form, and by the rows of square dots round the middle and beneath the sutures." End Reeve quote.

Schepman,M.M., Prosobranchia of the Siboba Exped.,Leiden,1911, lists the species with comments as follows," Haingsisi,Samau-island, Timor, 23 M, 1 spec.; Between islands of Bahuluwang and Tambolungan south of Saleyer, 8-10 M., dead coral; Halimeda,Lithothamnion, 2 sp.

One of the specimens from Stat. 66 has two dark brown bands in the aperture, and I think this is also the case with the other one (con.)

but the aperture is too filled by the animal to be certain of this. If constant, this form might receive a varietal name. In my specimens from the Seychelles I find no trace of these bands." End Schepman quote.

The species was reported from the Andaman Islands by Melvill and Sykes,Pro.Mal.Soc.Lon.,2:167,1890, pl.13 with comment as follows, " Mr. J.M. Williams, who has kindly compared our shell with specimens in his own fine collection, pronounces it to be " a small but very nice specimen of panniculata." End Melville & Sykes quote.

Oliva panniculata Duclos ,1835, variety williamsi Melville and Standen, Journ. Conch., v.viii,p.380,fig.III, p.405. Dautzenberg, 1927, Ref. Above, comments on var. williamsi as follows " An examination of the shells from Lifu, which we have before us, shows that fig.18 of Duclos and the one given by Melville and Standen represent the same species, and as Duclos supposed, that it is a variety of coloration, rather uncommon, of O. panniculata. This variety differs from the type by having its pattern more sharply marked and farther apart as well as by the absence of a band on the last whorl. The spots under the suture are faint or lacking altogether." ...." The absence of a callosity at the top of the aperture, and the disposition of plaits in the edge of the columella, do not permit placing this shell in the genus Olivella." End Dautzenberg quote.

Among some interesting sets of O. panniculata observed recently by the Burches may be mentioned; set from Mauritius, ex. Rene Viador, Calif. Acad.Sci.Coll. The shells are white to pinkish ivory mottled with pinkish obscure lines for pattern,banded with a row of broken dots near the middle of the body whorl. Another set, Cal Acad.1012, are marked with slender banded broken lines on the posterior part of the body whorl, a row of dots at the fasciole, and brown checks ringing the suture.

Oliva ozodona Duclos,1835, Monog.Oliva, t.5,figs.19,20.

We have been uncertain about a proper disposition of this species. In our discussion of the species, Oliva paxillus Reeve,Min.183, p.23 We noted that Tryon had placed O. ozodona in the synonymy of O. paxillus , but that the late J.R. le B. Tomlin stated that while O. sandwichiensis Pease,O. thomasi Crosse, and O. nitidula Duclos (not Dillwyn) are the same as O. paxillus, the O. ozodona is not of this group.

In studying the Monog. Oliva of Duclos we note that Duclos figured the species under discussion as follows, pl.5, figs.15-18 are O. panniculata , and figures 19-20 on the same plate are O. ozodona.They are very similar in all characters observable in Duclos fine color plate.

Therefore, we are tentatively assigning O. ozodona Duclos to the synonymy of O. panniculata Duclos.

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Inasmuch as we placed the following two species in the synonymy of Oliva mustellina Lamarck, Min.182,p.22,the following notes are included for the record.

Schepman,M.M. Prosobranchia of the Siboba Exped.,Leiden,1911.
Oliva octavia Duclos Duclos in Chenu,Ill.Conch.,p.29,pl.28,f.21,22 " Sta.231,Amboina. Reef, 2 spec. Perhaps this species belongs to one of the allied forms, but as the two specimens are easily separable, I have kept them separate."
Oliva laevis Marrat- Thes.Conch. vol,IV,Oliva, p.26,pl.20,figs. 330,331. " Lirung,Salibabu-island, up to 36 M, mud and hard sand 1 spec. A small specimen. Weinkauff and Tryon have much doubt about the validity of this species and really its characters are far (con)

from prominent, but I do not know to which species I should unite it and so have kept it separate." End Schepman quote.

Oliva nitidula Duclos *******

Inasmuch as we placed this species in the synonymy of O.paxillus because it is a homonym of O.nitidula(Dillwyn), the reference given below is, in fact, a record for O. paxillus Reeve.
Schepman,M.M.,Prosobranchia of the Siboba Exped. " Lirung Island, Salibabu-island. Up to 35 M, mud and hard sand, 1 spec. As the specimen is smaller and not so broadly shouldered as O. paxillus Reeve, but agrees in these respects with the species of Duclos, I have left it separate, though it is no doubt closely allied." End Schepman quote.

Two nice sets of O. paxillus Reeve were noted in the collections of the Calif. Acad. Sci. Both labelled O. sandwichiensis Pease = O. paxillus Reeve.
Hanalei,Kauai, T. Hawaii, Coll. D. Thaanum,1943; Puumaile, nr.Hilo, Hawaii,1949,Coll.C.M. Burgess, Ex. D. Thaanum.

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Oliva duclosi Reeve,1850 Ref. Min.182,p.16.
We noted an interesting set of this species in the collections of the Calif. Acad. Sci. The set is labelled as being from Itoman, Okinawa, Ex. D. Thaanum. The specimens are light in color but correct in form.

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Oliva sidelia Duclos- Ref.Min. 182,p.18
An interesting set of specimens assigned to this species was noted in the collection of the Calif. Acad. Sci. The shells are labelled Keppel Bay, Queensland,Australia, ex. Harold S. Mort. The specimens are about 1/2 inch in length, the apex callus, but the spire exserted brown,pattern of reddish wavy longitudinal lines.

We have found this rather a puzzling group. We placed the following species as a variety of Oliva sidelia Duclos, Min.182,p.18
The following are added for the record.
Oliva lepida Duclos Schepman,M.M. Prosobranchia of the Siboba Exped. Leiden,1911-Sta.248-Rumah Lusi,North point of Tiur-island.Till/54 M, s spec.;313 East of Dangar Besar,Saleh Bay, up tp 36 M, sand,coral and mud, 2 spec. " I think Reeve goes too far in uniting this species with O. carneola, I have quoted Tryon's figure because he states that fig.48 of his plate should be referred to the species under consideration;his figure is very rude and to me not recognizable. The specimens from Stat. 313 are less characteristic, but perfectly agree with specimens from the Andamans." End Schepman quote

A set noted in the collections of the Calif. Acad. Sci. seems assignable to this species, var. of O. sidelia , but is of rather unusual interest. The set is labelled as from Madras, India, Coll. M.D. Crichton. The shells are of the proportions of about one inch, spire callus, cylindrical, very little curve if any to the body whorl-white below the suture-body whorl pattern of zigzag blotches of white intersperced with zigzag lines of reddish brown.

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Oliva ispidula (Linnaeus),1758
Variety longispira Bridgman, Proc.Malac.Soc. VII,1906.
This is simply an elongate form stated in Min.182,p.2. However, the locality from which Bridgman's shells are said to have been taken is of considerable interest. Quoting Bridgman," The occurence of this common East Indian shell so far north in the Atlantic is very remarkable,although it has been recorded from South Africa."
End Bridgman quote. Bridgmans shells are said to be from the Cape Verd Islands.

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Additions and Corrections

Genus Olivancillaria d'Orbigny, subgenus Agaronia Gray,1839
Ref. Minutes 183,pp.2-9.

We have accepted as one of the major divisions of the family Olividae, the genus Olivancillaria d'Orb.,1839, type species,O. brasiliana (Lam.),1810, and subgenus Agaronia Gray,1839,type species , O. hiatula (Gmelin),1792.
The reasons for this decision were stated in Min. 181,p.4. It would seem that the only alternative would be to restrict the genus Olivancillaria to the type species,ignore all connecting characters, and place the others entirely in the genus Agaronia. This does not seem logical to us, and the purpose of restating the issue is the fact that some recent authors are disposed to consider that Agaronia forms a recognizable and separable group. The advice of other students is solicited.

The fact remains that the species assigned to Agaronia either as a full genus or a subgenus offer some very difficult problems. We have studied thousands of specimens including the collections of the California Academy of Sciences, Stanford University,Natural History Museum of San Diego, and others. The results have been far from conclusive.

Before commenting on the various collections it seems logical to state the characters of some of the species involved. They are all described as Agaronia , which we consider a subgenus as stated above.

Agaronia travassosi F. Lange de Morretes,1938 Livro Jubilar Do Professor Lauro Travassos.

There are four figures in the original description of this species. Two of them indicate a low spired form reminding one of some of the specimens from the Pacific coast of Central America, and the other two indicate a higher spired form alalagous in form to hiatula or testacea. The original description follows in the language of the author.

" Habitat:-Praia do Gato,Bahia dos Castelhanos, Ihla de Sao Sebastiao.
Collector:- Autor, em Julho de 1936 Type:-No.14.104.
Paratypo:-No. 14,105 na Collectao do Museu Paulista.
Concha fusiforme-ovalada,espira acuminata de sutura linear,circumvolucao apical escuro-esfumacada,base da ultima circumvolucao do apice cinzaclaro,circumvolucao maior marfim-esescumacado,coberta de linhas transversaes interruptas,formando manchas e angulos pardo-escuros de tamanho desigual,columella branca,abertura e callus azulado-cinza quasi branco, base da cor do desenho com estria mediana clara cor do fundo do mesmo. Typo, valva de animal adulto, faltando o. apice: Comprimento- 44 mm;Diametro maior-19 mm;Comprimento da abertura -35 mm; Diametro maior-9 mm. Paratypo,valva de animal jovem com apice perfeito: Comprimento-20 mm;Diametro maior-8 mm. Ambos encontrados sem animal.
Differe de A.hyatula (Gmelin) ,pela conformacao mais abobadada e ovalada da ultima circumvolucao, pelo que se assemelha um tanto a' A. testacea (Lamarck), pelo apice, que tamben A.testacea tem mais agudo e ainda pelo desenho mais accentuado. " End quote.

Agaronia lanei F. Lange de Morretes,1938 Livro Jubilar Do Professor Lauro Travassos, Rio de Janeiro,1938,pp.330-331.

This species is porcelain white and strangely reminiscent of some of the specimens from the Pacific Central American coast. The original description follows in the language of the author.
" Habitat:-Guaratuba,Estado do Parana. Collector :-Autor em 1927
Typo:-No. 88 na Collectao do autor/ (con.)

" Concha fusiforme-ovalada, espira acuminada,de sutura linear e apice nao tinto, de conformacao geral semelhante a' A. travassosi, cinza-claro com estrias transversaes onduladas de cor mais escura, columella,callosidade e base brancas. Valva de animal adulto: Comprimento-46 mm; Diametro maior-19 mm;Abertura-35 mm;Abertura diametro maior-9 mm.

Esta concha,colhida sem animal, e' affim a Agaronia steeriae (Reeve) da Africa Occidental, que ao contrario de Gray(9), reputo boa especie e nao synonyma de A. testacea (Lamarck). Reeve (6) da na estampa XVIII, sob no.37 um bom desenho da steeriae e em sua critica diz: " ... the general colouring of the shell is more like that of the Mexican O. testacea . It differs, however, from the last-named species both in the depression of the columella,which gives it a boat-shaped form, and in having a shorter spire".

Examinei exemplares de A. testacea existentes na Collectao do Museu Paulista e provenientes do Panama e concordo plenamente com Reeve. Ainda que sua Monographia do genero Oliva nao tenha estructura systematica, e' optima quanto as diagnoses e illustracoes.

Se quizessemos unir animaes tao bem differenciados nem uma das Agaronia manteria seu valor especifico.

Agaronia lanei differe de steeriae nao pelo colorido e tamanho ((Reeve da a' figura 63 mm) mas, tambem, pelas circumvolucoes mais elevados e nao concavas." End quote.

Agaronia murrha Berry,1953 Transactions of the San Diego Society of Natural History, vol.XI, no.16,pp 417-419, pl.29, fig. 1, text fig.5- Notices of New West American Marine Mollusca.

Inasmuch as it is possible that this species may be somewhat contraversial, the entire description of the author follows.

" Shell of moderate size,rather heavy at maturity,ovate-fusiform, widest near middle,the spire tapering rapidly and on the lipside somewaht convexly to the minutely mamillate apex;anterior extremity truncate. Whorls 5 or a trifle more, rapidly increasing, the body whorl convex and including about 90% of the total length of the shell. Suture sharp and strongly but not very deeply channeled.Aperture ample,sharply angled posteriorly,about three-fourths as high as the shell; outer lip sharp until maturity when it becomes reinforced inwardly by a whitish callus which becomes quite heavy approaching the suture;outer anterior lobe subangular,slightly surpassing the columella;canal open, moderately wide;parietal wall covered by a sharply delimited white callus which is thickened above the suture posteriorly and thence extends in most specimens completely across the whorls to the suture above so that the spire is completely calloused; anteriorly the callus passes over the columella to the canal.Columella with a single strong fold at the canal which is bounded by a rather sharp and deep channel;behind this appears a rather complex system of low folds,-- first,two or three outer one parallel to the callus-margin,second,entering against these at a low angle and supplanting them toward the aperture are three or four more slender costae,and third, an apertural series of low less sharply ascending folds which are of rather irregulardevelopment and strength;fasciole hardly elevated, Surface smooth except for extremely weak traces of a microscopic spiralstriation and gworth lines,the latter becoming stronger in nearing theaperture;parietal callus and fasciole microscopically whinkly-punctate.

Color of adolescent or mature shells everywhere a slightly grayish porcelain-white, the outer wall of the interior deep brownish except for the calloused margin of the lip which is white;very young shells light brownish gray with an indistinct yellowish zone below the suture,a rather sharp white band on the anterior part(con.)

of the body whorl, and a brown-bordered white zone marking the fasciole.
Measurements of largest paratype, alt. 38.5 mm,max. diam. 16.6, alt.aperture 31.8 mm, no. whorls 5; of holotype, alt. 36.3, max diam. 15.4, alt.aperture 29.3 mm, no. whorls 5+.
Holotype: San Diego Museum of Natural History.
Type locality: Corinto,Nicaragua (Herbert N. Lowe,1931)
Commentary: In critically reviewing the available West American specimens of *Agaronia* with a view to correlating their distribution, it shortly became apparent that two quite different forms are involved whereas only a single species, the widespread *A. testacea*(Lam.) has been hitherto recognized from the region.Since an exhaustive search of available literature has revealed no lost name which can be revived for the rarer form,a name is here supplied for it and tentatively given specific rank. It differs from *A. testacea* in detail at almost all points, but adults may perhaps be most easily separated by (1) the low spire,slightly convex on the apertural side;(2) the long aperture;(3) the constricted and relatively shallow sutural channel; (4) the more evenly ovate outline;(5) the extension of the parietal callus across the whorl to the suture with a consequent smoothly calloused spire;(6) the relatively large and more mammillate nepionic shell;(7) the closely wrinkled inner lip, with its folds oblique to the major plaits; (and (8) the barely raised fasciole. To these might be added th e opaque whitish-porcelain coloring of the exterior and the inside margin of the outer lip,besides the warm deep brown of the interior without any trace of the usual bluish gray of *A. testacea* ,except that it must be borne in mind that the Olividae are a family in which extreme color variants are of the commonese occurence and these differences,conspicuous though they are, may turn out to be more characteristic of the particular colony whence the type-series was taken than of the species as a whole,although some describably difference in the respective color ranges of the two species is quite certainly to be anticipated. Until then such characters as those provided by the calloused spire and the nepionic shell should provide more certain criteria for separation than mere color,but this can be better told when larger series become available for comparison. Although the present species apparently lacks the lively coloring exhibited by *A. testacea* in its best forms and is not known to approach it in size, it is nevertheless attractive in a modest way." End Berry quote.
Keen, Sea Shells of Tropical West America,1958,p.422,fig.628, states," The shell is smaller than that of either of the other two species,porcelain white outside, brown within. Length 36 mm; diam.15 mm. Corinto,Nicaragua; rare." End Keen quote.

Agaronia propatula (Conrad,1849) Proc.Acad. Nat.Sci.,Phil.v.4.
Keen,Sea Shells of Tropical West America, 1958, p.422, fig.629, states," *Agaronia propatula* (Conrad,1849) (Synonym:A.*hiatula* [Gmelin] of *authors*). Though long grouped with *A. testacea*,*this* seems to be a distinct form, resembling but not *identical* with the true *A. hiatula* of the eastern Atlantic. The shell is shorter and wider *than that* of *A. testacea*, more uniformly colored bluish gray, though some *specimens show faint* zigzag lines of brown.The spire is proportionately shorter and more bluntly tapering.Length about 42 mm.;diameter,20 mm. Southern Mexico to Ecuador;not common." End Keen quote.

(con.)

Agaronia testacea (Lamarck,1811) Ann. du Mus.,xvi,324
Keen,Sea Shells of Tropical West America,1958, p.423, fig.630,states, " Agaronia testacea (Lamarck,1811) (Synonyms: A reevei Morch,1860; Oliva (Agaronia) testacea var. griseoalba,philipii Von Martens, 1897). The general color is a soft blue-gray or yellow-gray with brownish wavy axial lines, the base and apex brown, the columella white,and the interior of the aperture violet-brown. According to the Giffords (1951) the animal itself is grayish to buffy. They found these shells living the highest up of any mollusks on the beach. Length 50 mm;diameter,20 mm. The head of the Gulf of California to Peru; fairly common." End Keen quote.

There are some beautiful color illustrations of the Agaronia in Duclos, Coquilles Univalves Marins, Pl.3, figs. 13-16. Figs. 13-14 seem to be of testacea, 15-16 of hiatula.

Olsson and McGinty,Recent Marine Mollusks from the Caribbean Coast of Panama with Descriptions of Some New Genera and Species, -Bulletins of Am.Paleo.,vol.39,no.177.
It is of passing interest that the authors list Agaronia testacea living from Bocas Island,Caribbean.

We hazard no final conclusion on this group at this time. It seems to us that there are two or more recognizable forms, but the question of whethey they are genetically related varieties of one entity or distinct species remains to be answered. It is certain that they all appear from the same localities on the Pacific Coast.

The San Diego Museum of Natural History contains many large sets of this confusing group.
Agaronia murrha Berry , or Olivancillaria (Agaronia) murrha (Berry
We studied the holotype of this species, It compares in all details with the description, and as given in Keen,Sea Shells of Tropical West America, and with figure 628 on page 423. Some of the sets of specimens noted will follow with discussion.
One very nice series is labelled A. testacea (Lamarck), H.N. Lowe,1930, from Acapulco. This series includes specimens to match all characters mentioned for A. murrha Berry, with others that seem to be A. propatula (Conrad,1849) fide Keen, species and figure No. 629, pp.422-423. It seemed to us that there were possible intergrades between the two.
A large set from Corinto, also of the H.N. Lowe collection,1931, is of unusual interest. All degrees of obesity may be noted. With the holotype of A. murrha in hand, it is possible to match it perfectly both in size and characters,but many others are also present in this set.
Several sets are present labelled from San Juan del Sur,Nicaragua, by H.N. Lowe, 1931. This lot shows some of a clear golden yellow, #28988, with others in set #28985 that seem to be the young of the same form of which #28925 is the adult. A very large series of specimens from San Juan del Sur are very dark, low spired, with a dark spot on the side of the aperture on the whorl above the body whorl. In an adjoining tray is another large set from Corinto also collected by Lowe. Specimens collected by H.N. Lowe from Acapulco in 1930 are exceptionally large with a heavy callus. These contain shells to match every detail of the description and figure given by Keen,species 629, for A. propatula (Conrad).
It may be mentioned that the many sets from the Gulf of California such as one collected by Lowe at Kino Bay, are large, higher spired and obviously typical A.testacea (Lamarcj,1811), as figured and described by Keen,species 630.

(con.)

The collections of the California Academy of Sciences include the sets in the main collection with acquisition numbers, and also the rather large collection of the family made by D.S. and E.W. Gifford which is separate and not in the collection cabinets. Brief comments on some of the sets will follow.
No.799 labelled A. testacea pres. de l'embouchure du Rio Esmeraldas, Ecuador. This is approximately the A. propatula type. No.1026 from Corinto Bay, Central America, is of the porcelain white A. murrha form. Set No. 1025,also from Corinto Bay, contains specimens with the high spires of typical A. testacea (Lam.) and also the lower spired wider apertured A. propatula form. Set No. 1024 from the same locality is entirely of the high spired typical A.testacea. Set No. 27581 from Mazatlan, Temp.Crocker Exped.,1932 is A. testacea . Set No. 17946A from Piedra Blanca, Costa Rica, Crocker-Beebe Exped. consists of shells, five of them a little lower spired, and seem to be another good set to bridge the gap between the low spired and typical A. testacea. Set No.24108 from Maria Magdalena Island, Mex.,Tres Marias Group, G.D. Hanna and E.K. Jordan Coll. Set contains specimen obviously tending toward the A. propatula form along with typical A. testacea in the same tray.Set No. 27226 from Corinto,Nicaragua is of the porcelain white A. murrha type. Set No. 34301 from San Juan del Sur,Nicaragua,H.N. Lowe is of the dark form as noted in other collections, low spired. Set No. 28186 from Kino B ay, Gulf of Calif. are all typical A. testacea in form.

Sets noted in the Gifford collection are , one lot labelled A. hiatula (Gmelin) from Santiago Bay,Colima,Mexico collected Jan.30-Feb.2,1946. This lot contains some of the low spired wide apertured A. propatula form , with a number of others of the typical A. testacea form. Apparently none of the murrha form. Specimens labelled from Topolobampo,Sinalow seem to be of the A. propatula form. Many very large sets running to hundreds of specimens from Rocky Point Bay,Sonora,Mex, Oct.26 to Nov. 13,1944, and sets from other localities in the Gulf of California. All are typical A. testacea.

A few sets noted in the collection of the Stanford University are. -Set No.37360 from Salango,Ecuador. Jay Marks. Brown, low spired,no dark spot above the callus. Set No. 8278 from Nicaragua. Had been labelled A. hiatula . This is the low spired dark form of murrha. Set No. 42700 labelled Guatemala, Palmer, contains specimens of the A. propatula form , as well as two large and three medium sized shells of the porcelain white murrha type, and also one other dark specimen.Set No. 8172 from Acapulco,Mex.,Lowe contains six shells of the large low spired wide apertured type. Set 46517 from near Remedios,Panama, J. Zetek is approximately the A. propatula form. B ut seems identical with others from Mazatlan.

Some sets of this complex in the Burch collection are:-
Set from El Coco, W. Costa Rica,H. Miller leg.,1947. This set contains specimens clearly of the color and form of murrha , but with others tending toward both propatula and typical testacea. Panama Bay, Captain Bitler,June,1950 is of the propatula form. Another set from Panama Bay is typical testacea. Another nice set from Gatun,Canal Zone,F.R. McDermitt leg. 5731/55 is typical A. testacea in form but perhaps darker color than those of the Gulf. Another set from Acapulco,Mexico is entirely of the high spired typical A. testacea. Another set from San Blas,Sinaloa is of typical form and color. Large set from Acapulco,Mex. Jack Neville leg. 7/1953 contains several of the propatula type,others of murrha, none of them typical. Salina Cruz,Mex.M. Sohl leg.6/1950 seem nearer A. propatula in form. Panama,Haskell-typical testacea.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Feb.3,1959. The meeting was called to order at 7:30 P.M. by the president, Dr. Donald Shasky. In the absence of the secretary, Mr. John Fitch, the minutes of the meeting of Jan. 6 were read by Sandra Delp. Dr. Shasky requested that Mrs. Rose Burch,hospitality chairman, be added to the list of committee chairmen for 1959. With this addition the minutes were approved.

Mr. Crawford Cate commented on the current publication of the Proceedings of the Malacological Society of London,which was devoted to a discussion of the carrier shells (Xenophoridae) from New Zealand. An interesting sidelight of this discussion was the fact that conchologists now feel that the Xenophoridae should be moved to a position closer to the Strombidae. Dr. Shasky agreed with this conclusion,stating that the animal of *Xenophora* which he recently collected in Mexican waters,strongly resembled that of the Strombidae.

Acting as chairman, Mr. Cate announced that all but one of the programs for this year had been scheduled,promising enjoyable and informative meetings.

The guest speaker for the evening was Dr. W.P. Popenoe, Professor of Geology at U.C.L.A., was then introduced by Mr. Cate, who offered a brief resume' of Dr. Popenoe's varied scientific activities.

Dr. Popenoe delivered an enlightening talk dealing with the growth and purpose of the conchological department at U.C.L.A. It was pointed out that work in this department is based not so much on the conchologist's standpoint,but rather, on the paleontologists point of view,stressing shells in our life time as a key to the past. The present shell collection is actually another branch of the paleontological collection,aiding in finding family associations to fossils,acting as an indicator of climatic and temperature changes in the California seas, and also being useful in tracing evolutionary and structural changes in mollusks. Dr. Popenoe traced the growth of the shell collection from about 800 species 13 years ago to a present 6,000 or more species,saying that additions to the collection are obtained by purchase,grant,exchanges,and some collecting. Among those active in exchanging with U.C.L.A. was named Mr. John I. Staid of Rheims,France. Two valuable additions to the collection were made with the acquisition of the Willett collection and part of the collection of Dr. James Zetek of Panama, the latter through the efforts of Dr. Myra Keen. The objectives in the expansion of the current shell collection at U.C.L.A. as listed by the guest speaker are: 1. To obtain as strong and as complete a collection of west coast mollusks from Panama to the Arctic Sea as possible. 2. For systematic purposes, to show genotypes and subgenotypes.3. To have a good representation of mollusks representing different marine faunal provinces. With the assistance of numerous devoted persons, these objectives are being fulfilled. However, it was brought to the attention of the members that the collection is weak in systematic groups,small shells,volutes, and others,and the invitation was extended to contribute duplicate shells to the collection at any time. This was not a facetious invitation, as it is obvious that well labelled material is extremely valuable and often difficult to obtain.

Following Dr. Popenoe's discussion the 46 members and guests in attendance were treated to a fine disply of *Spondylus* from Mr. and Mrs. Cate's collection, at which time Mr. Cate presented a short description of the genus,mentioning that there have been few additions in recent years.

Six *Conus hebraeus* from Clipperton Island were then made available to the members through the generosity of Mr. E.P. Chace.

(con.)

In the absence of the hospitality chairman,the guests and new members were introduced by Mrs. Chace, who also welcomed several members of long standing who have not been present in recent months. Before adjourning for a 15 minute break, Mr. Hall,president of the Pacific Shell Club, extended an invitation to attend the meetings of that club, held at 2:00 P.M. in the L.A. Co. Museum, the third Sunday of each month. Following the break Dr. Shasky told of his recent review of the club constitution as presented in the club Minutes #96 of Jan.,1950. It was his opinion that the constitution was badly in beed of revision,and for this purpose, a committee under the direction of Dr. W.O. Gregg , will meet sometime following the March meeting. Once again Dr. Shasky explained the purpose of the once active " Lost Operculum Club" and called for a volunteer to act as secretary for the northern species. Dr. George Kanakoff nominated Mrs. Fay Howard for the position, who in turn nomunated Dr. Kanakoff. The nomination was seconded by Mr. Cate and Dr. Kanakoff was duly appointed secretary for the fauna north of Cedros Islands. At this time Mrs? Howard submitted a list of shells in her possession for comparison with the last records of the " Lost Operculum Club" as shown in the club Minutes of Jan.1950 to June,1950. It was mentioned that Dr. Berry has numerous large specimens in his collection,including a very large Murex trialatus ,which should be submitted for a possible record. Further proceedings of this club will be reported at future meetings. Dr. Shasky reported that due to transportation difficulties, his proposed collection trip to Guaymas had been called off. However, he was able to spend some time collecting at Point Loma and Roserita Beach. Dr. Wendell Gregg was called upon to report on his recent trip to Death Valley in search of land snails Collecting was reported to be good at various localities in Panamint City and the Amargosa Mountains. However, Dr. Gregg found several areas inaccessible, which made it difficult to reach the type localities for which he was searching. Field trip chairman, Mrs. Dorothy Brown reported good tides in the Gulf over the week end of Feb.21 and it was determined that roads below the border are now in good condition, making good shelling areas accessible. She also reported the tragic depletion of Oliva incrassata on the Gulf due to the natives collecting it for commercial purposes. Following this report the drawing was held for the door prize which was won by our guest, Mrs. Kathryn Popenoe. Dr. Shasky read a letter of thanks from our newly elected honorary member, Mr. Harry Bauer, and called on the treasurer, Dr. Homer King, for a report. The current balance in the treasury is $68.02. Mrs. Chace then reported that another issue of the Nautilus was off the press and would be of interest to all members,and Mrs. Howard submitted a recent issue of the Ford Times which contained an informative article on shelling in Baja Calif. The meeting was adjourned at 9:27 P.M.

Respectfully submitted, Sandra Delp, Sec. pro. tem.

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We have learned of the death of Mrs. Hattie Gemmell of San Jose, Calif. Mrs. Gemmell was an enthusiastic collector for many years, specializing on fine Cypraea and Haliotis. Mr. Andrew Sorensen of Pacific Grove, Calif. purchased the collection several years ago. We recently saw one of the shells in Mr. Sorensen's collection. It is a specimen of the Haliotis fulgens with no siphon holes. Mrs. Gemmell exchanged a fine specimen of Cypraea aurantia for that shell, and as a matter of fact that started Mrs. Burch on her collection of Cypraea. Mrs. Gemmell had not been active for several years before her passing.

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RANGE EXTENSIONS FOR GASTROPODS OF TROPICAL WEST AMERICA

By Donald Shasky, M.D.

It has been my priviledge over the past three years to make several collecting trips to the Gulf of California. Collecting stations include San Felipe, Puertocitos, and San Luis Gonzaga Bay on the east coast of B aja California, and Puerto Penasco, Guaymas, Yawarros, and Los Bocas on the Sonora coast.

Since the publication of Dr. Myra Keen's recent book " Sea Shells of Tropical West America" we have an excellent reference for the many species from this area. In reviewing the section on gastropods I note that the previously published ranges for many species must be increased, a fact Dr. Keen recognizes even more than most of us. As more work is done on this fauna many species with a reported narrow range will be found at great distances from the supposed restricted area.

The first of the following three lists of shells that I have personally collected while diving, shore collecting, and taken from the nets while a passenger aboard the shrimp trawlers. The second brief list includes shells collected by friends in the areas mentioned. The third list are shells that have been brought in by sailors of the shrimp fleet.

As the shrimp boats based at West Mexican ports do not go outside the waters of territorial West Mexico it can be assumed that when a shell is brought in, even though the exact collecting station is unknown, it is still a West Mexican species.

All specimens listed below were taken alive except the Cancellaria clavatula.

1. Crucibulum serratum (Broderip)/concamerata Reeve ~~-- several~~ specimens taken from fragments of various bivalves brought up in the shrimp nets trawled at 30 fathoms off Cabo Haro, Guaymas, Sonora, Dec. 1958. Previous locality, Acapulco, Mexico, to [illegible] Islands, Ecuador.

2. Xenophora robusta Verrill-- one specimen taken from shrimp nets trawled at 6 fathoms about 5 miles from entrance to Guaymas Harbor. Dec. 1958. Previous locality from the La Paz area of the Gulf of Calif. to the Gulf of Tehuantepec.

3. Cypraea cervinetta Kiener-- I am not completely certain as to how far north this species has previously been reported, but I have taken 6 specimens from beneath large overturned rocks at " Beetle Bay" near Bachochibampo Bay, Guaymas, Sonora. Specimens taken Dec. 1957, June, 1958 and Dec. 1958. Several friends also have taken specimens from this area. It may be of interest that moray eels have frequently been lurking around the rocks to which these shells were attached. Depth varied from 3-10 feet. Dr. Keen states that the species is rare in the southern part of the Gulf of California, commoner south of Mazatlan, to Paita, Peru, and the Galapagos.

4. Distorsio decussatus (Valenciennes)-- several specimens brought up in the shrimp nets trawled at 30 fathoms off Cabo H aro, Guaymas, Sonora, Dec., 1958. Previous reported locality southern part of the Gulf of Calif. to Ecuador.

(con.)

5. *Muricanthus ambiguus* (Reeve)--- one specimen taken on a sandy bottom while diving in about 30 ft. of water at " Beetle Bay" near Baaochibampo Bay, Guaymas, Mex. June 1958. Previous reported locality Southern Mexico to Panama.

6. *Muricanthus oxycantha* (Broderip)-- one specimen taken while diving in about 5-6 feet of water at " Beetle B ay" near Bachibampo Bay, Guaymas,Son. This shell was exposed on a rocky reef. Dec. 1958. I have seen one other specimen of this species taken by a diver in July 1958. Previous reported locality, Colima,Mexico to Southern Ecuador.

7. *Muricopsis zeteki* Hertlein and Strong--- one specimen taken from an overturned rock exposed during a medium low tide at Puertocitos, Baja Calif.,April 1958. Previously reported locality, Mazatlan, Sinaloa,Mexico.

8. *Mitrella millepunctata* (Carpenter)--- several specimens from under small overturned rocks exposed at medium low tide at Puertocitos, Baja Calif., and Puerto Penasco (Cholla Bay),Sonora. March 1957, and November 1957. Reportedly restricted to the southern part of Lower Calif. and the Gulf.

9. *Engina tabogaensis* Bartsch--- Six specimens (4 adult and 2 juvenile) from beneath a single overturned rock while diving in about 5 feet of water at " Beetle Bay" near Bacochibampo Bay, Guaymas.Son.,June 1958. Previous reported locality from Mazatlan Mexico to Panama.

10. *Vasum caestus* (Broderip)--- two large specimens taken from a pebbly bottom while diving in about 30 feet of water at " B eetle Bay" near Baaochibampo Bay, Guaymas, Son. June 1958. Several diving friends have taken specimens around some of the 7 islands in Bachochibampo Bay in as little as 4 feet of water. Previous reported locality La Paz to Panama.

11. *Cancellaria clavatula* Sowerby--- one specimen brought up in the shrimp nets trawled at 30 fathoms off Cabo Haro,Guaymas,Son., Dec. 1958. Previous reported locality Mazatlan, Mexico to Paita, Peru.

12. *Terebra lingualis* Hinds--- several small specimens brought up in the shrimp nets trawled at 30 fathoms off Cabo Haro,Guaymas, Son.,Dec.1958. Previous reported locality, Mazatlan, Mexico to northern Ecuador.

II. 1. *Jenneria pustulata* (Solander)--- one specimen taken by Dr. Phillip Johnson at Puertocitos, Baja Calif. The shell was living on seaweed attached to a rocky reef exposed at a medium low tide. April 1958. Previously reported from the southern end of the Gulf of Calif. to Ecuador. (I have found several specimens of this living beneath rocks out beyond the tideline in the waters around Guaymas.)

2. *Cyphoma emarginatum* (Sowerby)--- several specimens taken by Mrs. Betty Mackay that were attached to the white " sea whip" gorgonian. Specimens were taken in and around Bachchibampo Bay, Guaymas,Son., in about 10-15 feet of water. Summer 1958.Previous reported locality--Mazatlan,Mexico to Ecuador.

(con.)

III.

1. Stromboli beebei (Hertlein and Strong)---From shrimp nets off Cabo Haro,Guaymas,Son. in about 45 fathoms. Previously reported from Gorda Banks,southern Gulf of Calif.

2. Hexaplex brassica (Lamarck)--- trawled from Magdalena Bay, Baja Calif., in from 10-15 fathoms. I have also seen one specimen that was reportedly taken by a diver from Bacochibampo Bay,Guaymas. Previously reported from Mazatlan,Mexico to Peru.

3. Pterynotus inezana (Durham)--- one specimen taken by trawling in from 30-45 fathoms off Cabo Haro, Guaymas,Son. I have seen two other living specimens from this same locality, and two beach specimens from Cachore Beach which is about 8-10 miles from Cabo Haro. The only previous report of this species is from a Pleistocene fossilcollected at Santa Inez Bay, Baja Calif. Since the publication of her book Dr. Keen has seen my shell and readily concedes that P. inezana and P. swansoni are not synonyms. However, she now raises the question as to whether P. inezana is not a synonym of P. pinniger. If so, this is an extension of range from Panama, but from my own comparison with two specimens of P. pinniger in Dr. S.S. Berry's collection I think we are dealing with two separate species. It is hoped that better comparative material will soon be available.

4. Fusinus panamensis Dall--- three specimens brought in by the trawlers into Guaymas. I have also seen other specimens that were brought in there. Previously reported from Panama to Ecuador with a question raised as to whether it was also found off West Mexico.

5. Mitra belcheri Hinds--- trawled from the Bay of Magdalena, Baja Calif. The finest specimens I have seen came from this locality. Previous reported locality- Mazatlan,Mexico to Panama.

6. Trigonostoma bullatum (Sowerby)--- specimens trawled from Tastiota,Son. which is roughly 80 miles above Guaymas. Previous reported locality- Acapulco,Mexico to Panama.

7. Trigonostoma milleri Burch--- one specimen from an unknown locality along West Mexico. Previous reported locality,Costa Rica.

8. Conus patricius Hinds- one specimen from an unknown locality along West Mexico. Previously reported from Nicaragua to Ecuador.

9. Terebra ornata Gray--- one specimen from an unknown locality along West Mexico. Previously reported locality-Panama.

At a later date it is planned to publish a second paper dealing with the pelecypods and some of the other gastropods that as yet have not been thoroughly worked up.It is hoped that this paper will stimulate some of the other collectors who also have range extensions to share these with us. I wish to thank Drs. S. Stillman Berry and Myra Keen for their help in identifying some of the more puzzling species listed above.

ADDENDA- One shell not mentioned when this paper was presented, but should be added is:

10. Turcica caffea Gabb--- specimens trawled from Tastiota,Son., which is roughly 80 miles above Guaymas. This shell occurs (con.)

along the outer coast, but, I believe, this is the first report from inside the Gulf of California. ***

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Publications Received

The Nautilus, Vol.72, No.3,Jan.,1959- The papers in this issue are: Variability of shell in Aplysia californica by Lindsay R.Winkler. This is a paper of genuine interest to us because it deals with our familiar southern California sea hare.

Classification and radula of Mitromorpha atramentosa by Virginia Orr. This is an interesting paper and the work of the author on the radulae is carefully discussed. However, the assignment of the genus to the Turridae with the type species filoda Carpenter is another confirmation of the conclusion reached in these Minutes, No.49,June,1945, pages 33-34. We rejected a number of authors, and listed, Genus Mitromorpha Carpenter 1864, Type (by monotypy) Mitromorpha filosa (Carpenter), placing the genus in the Turridae.

Marine shells of Middleton Island,Alaska By G. Dallas Hanna and Leo George Hertlein. This paper includes one full page plate, and is certain to be of great interest to all serious student of the fauna of this coast. The discussion of the various forms of Mytilus edulis Linnaeus is excellent, and there is no doubt but that many of us have specimens in our collections labelled Littorina grönlandica (Menke) 1830 following Dall,1921. The authors state that the species figured on their Pl. 10 is not Menke's species, but is Littorina arctica Möller. However, it is advised that you study the discussion before changing any of the labels, because Littorina arctica Möller is stated to be a smooth, unsculptured form. The species of Menke is spirally ribbed. I am unable to recognize the L. arctica in the Burch collection. However, it will be a new name to a check list of the fauna of this coast.

Land snails of R.N. Huyck Preserve, New York by William B.Muchmore.
Inland Mollusks from Hudson Bay, Manitoba by William J. Wayne.
John T. Gulick's Hawaiian Land Shells by William J. Clench.
Unionidae from Upper St. Lawrence River by Arthur H. Clarke Jr.
Radula of Lionesus stimpsoni Dall by Jay A. Weber.

Proceedings of the Malacological Society of London,Vol.33,part3, Dec.,1958/ The papers in this issue are:

The adaptations and relationships of the Xenophoridae(Mesogastropoda) By J.E. Morton. pp.89-100 ,two plates and numerous text ill. This is a scholarly paper that must be carefully studied to be fully appreciated. Many of us have followed Thiele in placing the Xenophoridae in Strombacea. I have my specimens arranged in this order systematically. However, the author here makes an excellent case for removing the group from Strombacea and associating them with the Calyptracea. It is a puzzling group.

Preservation of Molluscs By G. Owen and H.F. Steedman

Observations on the stomach and digestive gland of Scutus breviculus By Gareth Owen

A Revision of the systematic position of the Prosobranch Gastropod Cingulopsis (= Cingula) fulgida J. Adams By V. Fretter and A.M. Patil.

The distribution of cellulases and related enzymes in Mollusca By B.A. Stone

Notes on prionodont pelecypods by David Nicol, Southern Illinois University-- Journ.Wash.Acad.Sci.vol.48,no.10,Oct.1958.

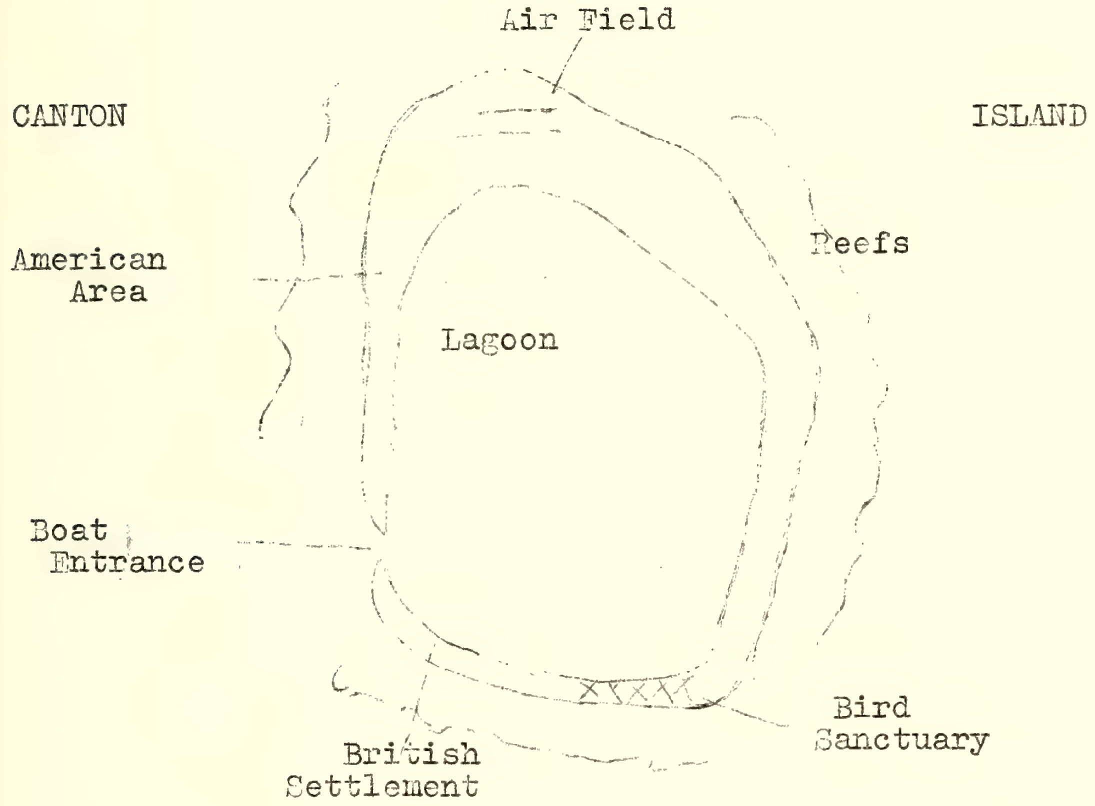
The author gives an interesting account of the geological record. Time of origin of the Prionodonta- Additional Cucullaeid Genera-

A BRIEF INTRODUCTION TO CANTON ISLAND

By Dorothy Lincoln

The island is 27 miles from one point to the other,both on the mouth of the boat channel. The widest portion is not even one mile. Many places are so narrow that just a road exists between ocean and low tide. The outer edge of the island is built-up sea walls on the principle of dykes.

The landscape is not broken by mountains or hills. Just plain coral makes up the island. Edinberry,Phoenix,Hull Islands make up the rest of the Phoenix group. Hull Island is inhabited only by Gilbertese. The shells found there are similar to those found at Canton Island.



Mr. and Mrs. Albert Lincoln of Canton Island recently visited Southern California on their trip to America. It is a pleasure to share these notes on " Shell Collecting" with the subscribers to the Minutes.

NOTES ON SHEEL COLLECTING
CANTON ISLAND,SOUTH PACIFIC

*Dorothy Lincoln

So far I have acquired 434 varieties identified and many more unidentified.

According to recent Coast Guard soundings, the deepest spot in the lagoon which this tiny atoll encloses, is 75 feet. Of course, we know from personal experiences there are some crevices (con.)

that go deeper than this.Coral and other marine life abound in the lagoon,although there is a lack of sea fans and the usual shells that feed on them.

One interesting fact is that we recently found Haliotis iris Martyn. Until recently thought to be found only around Australia and New Zealand to quote Mr. Robert Talmadge, Willow Creek,Calif. The adult specimens found, though, were much smaller than the juveniles found in New Zealand. Tridacna elongata abounds on the ocean reef.

The reef surrounding the island is about 300 yards wide and then narrower in spots,and very flat. Shelling on the reef is excellent when the tide is low. Shelling beyond the reef is rather hazardous because of the huge breakers that break on the reef edge. Fear of the unknown has kept us from the very deepest and roughest spots.

Cypraea are just as numerous as Conus and can easily be collected at low tide, either day or night. The most common Cypraea found are: Cypraea poraria,mauritiana,tigris,depressa,vitellus,helvola,carneola, propingua,erosa,lynx,caput-serpentis. Not so common are Cypraea mappa,argus,testudinaria,asellus.

Some of the more common Conus found are: Conus miles,hebraeus, vexillum, and textile. Others found are one form of C.episcopus, pulicarius/ These are gathered by the buckets and often times we go through our collection and toss away the medium size and imperfect ones and keep only the large ones.

During the summer months (Dec,Jan.Feb.) the water is very warm, often times 92°.

More on shells- Turbo argyrostoma is very abundant and usually found in the same localities as Tridacna. So far, the only rare cones found by us are, Conus rhododendron - Contbuoy. Up to this time,I understand the localities given have been Australia and the Cook Islands. Evidently they are quite rare there, because we receive many requests from those places for this shell. There is a very large supply of pearl shells-Pinctada , as this area has never been commercialized for pearl shells. The native Gilbertese dive for them and use the inner shell for fishing lures. These live in about 6 to 7 fathoms of water in the lagoon.

While diving for shells there is always the danger of Moray eels. We once speared one that was over six feet long and weighed about 50 pounds- huge monster. While our boat is anchored, Manta Rays will come and scratch their backs on the anchor rope/ These seem to be very curious animals. Many sand sharks in the lagoon, with an occasional man-eating tiger shark 10 or 12 feet long.

Shell collecting on the reef at night is really something. In small areas, you can see 10 or 12 different kinds of Cypraea crawling around. Many times we have been heart broken to see a beautiful Pecten swimming along in the lagoon, and then see a huge eel cateh it and bite it in half,chewing shell and all. In fact, many of the traps set for shells only yielded broken shell portions and one or two eels/ According to my own records kept, best collecting is at night when the moon is full, low tide, in the months of May, June and July.

There is an estimated number of 200 kinds of sea weed in and around the island. I immagine this accounts for the large number of shells found there.

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THE SOCIETY OF THE LOST OPERCULUM

Have you ever noticed that when you go to the shell club meeting with a large specimen to show, someone always comes up claiming a larger one at home ? So to settle some of the arguments as to who has the largest shell, we are starting a competition. No slogans to write, no box tops to send, just measurements.

In other words we are after the Paul Bunyon of each species represented on the West Coast from Alaska to Panama. To interest everybody, we are including land,fresh water and fossil shells,as well as the marine varieties.

Judging from some of the stories we hear,the measurements are made on the scales used by fishermen telling about the one that got away, or on a scale with more than 25.4 mm. to the inch.

The rules are as follows:

1. Gastropods: Measure what you have left of the shell. No fair guessing how high the shell would have been if the nucleus or the canal was still on it. Give length and diameter.
2. Pelecypods: Give length and height. No more than 25.4 mm to the inch,nor more than 12 inches to the foot.
3. Give locality where found.
4. Indicate whether fossil, by giving age.
5. Give latest nomenclature please.

The above paragraphs and rules were taken from the Minutes of Jan., 1950. For about six months our club members and other subscribers to the Minutes contributed the measurements of their conchological giants.It is hoped that interest in this project will be revived and that there will be much greater participation.

Most collectors do not usually contribute their largest specimens to museums, nevertheless there are some huge specimens housed in museums, and we hope that the various curators will join with us in this interesting project.

For those species collected from Alaska to Cedros Island,Lower California, the measurements should be sent to Mr. George Kanakoff, The Los Angeles County Museum,Exposition Park,Los Angeles 7,Calif.

For the species collected below Cedros Island and through the Panamic range, the measurements should be sent to Donald R.Shasky, M.D.,1466 E. Chevy Chase Drive,Glendale 6, Calif.

On the following page is a compilation of the Panamic species reported in the Minutes from Jan.-June,1950. The nomenclature has been brought up to date in so far as possible. As soon as Mr. Kanakoff has had time to compile the northern species that appeared in 1950 they too will appear here.

It is hoped that club members will exhibit the specimens they are reporting at the meeting when their report is made. A special time will be set aside for this in the program.

John Burch	Length	Width
Laevicardium elatum (Sowerby),La Paz,Baja Calif.	140 mm.	
A.Sorensen		
Fusinus dupetithouarsi(Kiener),Guaymas,Sonora	205 mm.	
Melongena patula (Brod. & Sby.), " "	190 mm.	
Hexaplex brassica (Lam,),Mazatlan,Sin.,Mex.	173 mm.	130 mm.
Paul H. Steele (deceased)		
Patella mexicana (Brod. & Sby.) No locality	188 mm.	
Mr. and Mrs. Robert Alexander		
Conus fergusoni Sowerby, Guaymas	136 mm,	
Capt. W.S. Bitler		
Agaronia testacea (Lam,), Panama Bay	66 mm.	
Conus purpurascens Broderip, "	81 mm.	
Conus patricius Hinds,Venado Beach,Panama	136 1/2 mm	86 1/2
Cypraea cervinetta Kiener,Paloseca, "	105 mm	52 1/2 mm
Capt. C.M. Dumbauld		
Cymia tecta (Wood),Perlas Islands,Panama	68 mm.	38 mm.
Cantharus pagodus (Reeve), "	56 mm.	25 mm.
George P. Kanakoff		
Crucibulum spinosum (Sowerby),Guaymas	50 mm.	46 mm.
Littorina varia Sowerby, Mazatlan	39 mm,	
Purpura patula pansa Gould, Mazatlan	80 mm.	
Thais biserialis (Blainville),Mazatlan	65 mm.	
Turritella gonostoma Valenciennes,Guaymas	86 mm.	
H.W. Miller (deceased)		
Fasciolaria princeps Sowerby,Culebra Bay, Costa Rica	266 mm.	
Malea ringens (Swainson),Tambor,C.R.	190 mm.	145 mm.
Horomya adamsianus (Dunker),Boca de Barrance, Costa Rica	53 mm.	34 mm.
** Adrana suprema (Pils. & Olsson),Tambor,C.R.	72 mm.	16 mm.
Anadara grandis (Brod. & Sby.),Puntarenas,C.R.	127 mm.	114 mm.
Protothaca asperrima (Sowerby),Tambor, C.R.	55 mm.	47 mm.
Macoma grandis (Hanley),Tambor,C.R.	85 mm.	63 mm.
Mactra velata Philippi,Puerto Soley,C.R.	116 mm.	85 mm.
Periploma planiusculum Sowerby,Boca de Barranca, Costa Rica	47 mm.	29 mm.

** Range extension from Panama.

There you arem, you Panamic collectors. -- LETS SEE YOU BEAT THESE AND ADD MANY MORE SPECIES TO THE LIST !!!

MINUTES 187
APRIL 1959
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

News of shells and shell affairs should be mailed to the editor,
John Q. Burch,
4206 Halldale Ave.,
Los Angeles 62, Calif.
[illegible]

PUBLICATIONS RECEIVED

Stohler, Rudolf- Two New Species of West North American Marine Gastropods- Calif. Acad. Sci., Proc. ,Vol.XXIX, No.11,pp.423-444, 10 figs, Feb. 27,1959.

One of the new species is Astraea (Uvanilla) rupicollina Stohler. Dr. Stohler has published a very thorough study giving many measurements and other data. The three species that seem to be very closely related are,(1) the new species A. rupicollina ,(2) A. petrothauma Berry, and the well known A. undosa Wood. Detailed comparisons are given. The degree of relationship will depend upon future investigation.

The other new species is Macrarene coronadoensis Stohler. This species is also very carefully described and compared with other species in the genus. A key is included indicating the specific characters with clarity. Perhaps it should be mentioned here although the author does not mention the fact, that most collections will contain these species under the generic name Liotia Gray. Macrarene, with type Liotia (Arene) californica Dall, was described as a new genus of the family Liotidae by Hertlein and Strong, in Zoologica,1951.

Olivella (Minioliva) acteocina Olsson,1956 Studies on the Genus Olivella -Proc. Acad.Nat.Sci.Phil.vol.108,pp.210-211,pl.12,f.6.
The author has placed this species in subgenus Minioliva, type species, Olivella perplexa Olsson 1956. The subgenus will be discussed under the type species.

The description and discussion of the author follows. " The shell is small,(average length about 4 mm.) with a relatively high,subcylindrical body whorl which is generally about 3/4 the total length, the narrower,tapering,scalar spire forming the ramainder. The sutures are deeply scalar, so widely overlapped by the thin, collor-like edge of the whorl in front as to be nearly concealed,but in fresh shells may show through the semitransparent surface of the whorl as a thin line. Whorls about 5, seated together like the collapsing sides of a telescope,the apical whorl forming the small,blunt,hemispherical nucleus. Fasciole simple,the pillar structure a single fold at the end of the columella. Parietal wall with a thin was of callus. Length 3.8 mm.,diameter 1.4 mm. The type i a specimen (Pl.12, fig.6) from the John Ford collection (ANSP.111791)labelled Panama but the exact locality not stated;however it is assumed that it is from the Caribbean coast. Another lot referred to the same species, is a fine series from Lyford Cay, W. New Providence, Bahama Islands, collected by McGinty, in 1947. The species is closest to O. perplexa but differs by its more cylindrical form, generally higher spire, more deeply scalar and nonappressed sutures, and larger nucleus. The species is probably widely distributed through the West Indian and Caribbean areas. A closely similar form occurs in the Pliocene of Ecuador (Rio Camarones,Esmeraldas). See also discussion under O. myriadina Duclos. Range- Bahamas to Panama, and perhaps the Caribbean. Panama: North Coast ? John Ford Coll.). Bahamas: Lyford Cay,West New Providence (McGinty, drift.) " End Olsson quote.

Olivella (Olivella) adelae Olsson,1956. Proc.Acad Nat. Sci.Phil., vol.108,pp.173-174,Pl.10,figs.8, 8a; Pl. 16,figs.9,9a.
The description and discussion of the author follows. " Shell of medium size (length about 12 mm.), subovate, thin or of medium texture, with a rather high body whorl and an elevated, evenly conic spire half the total length. Sutures linear, grooved, the edge of the whorl in front forming a narrow,slightly overhanging collar. Parietal callus extending weakly beyond the end of aperture about half-way to the suture,the pillar structure formed by a few small lirations which end sharply at the edge of the excavation of the pillar wall. Color is a leaden white except for a band of broken brown spots below the suture and another arranged at the edge of the fasciole,the fasciole itself white; the spire may be of uniform color or in some cases much darker approaching a blotched black. Radular ribbon like that of nivea but much smaller (a ribbon with about 30 rows of teeth has a length of 1.20 mm.,the rhachidian tooth about.18 mm. wide (longer diameter). (Text figure 14.) The paired medial cusps of the rhachidian tooth are more widely separated with smaller accessory ones between. Length 12.4 mm., diameter 4.5 mm. (Holotype, ANSP 194582). This is a wider, more stubby shell than floralia with which it has sometimes been associated; it also resembles a small nivea but differs by its more uniformly tapering spire and the nuclear whorls form a small conic and not drawn-out or tapering tip. The radular ribbon is much smaller than that of nivea. Apparently a common and widely distributed species in Florida, named for Miss Adele Koto of Beloit,Wis. as a tribute to her outstanding ability as a collector of rare and minute shells. Range,- Florida: Bradenton Beach (types)."
End Olsson quote.

Olivella (Ramoliva) adiorygma Verco,1909 Notes on South Australian Marine Mollusca with Descriptions of New Species, Part XI, Transactions and Proceedings and Report of the Royal Society of South Australia, 1909,Pl. xxv,figs.3 & 4.

This is the type species of genus Ramoliva, Cotton and Godfrey , 1932. It is no doubt quite distinct, but we prefer to use it as a subgenus. The description of the species by the author follows. " Shell small,solid,obliquely elongate-oval; smooth and white; apex blunt; whorls four, sloping convex. Suture linear, not canaliculate. Aperture oval, narrowed behind, widely open in front,notched.Outer lip ascending at the suture,simple,bevelled inside;inner lip a glaze over the columella,which has no plaits. Dimensions-Length 5.2 mm.; of body whorl 3.35 mm.; width 2.3 mm. Locality- Type from Backstairs Passage, 17 fathoms, with one other specimen; Gulf St. Vincent, depth unrecorded, 2, all dead. Diagnosis- It differs from Olivella in the absence of a canaliculate suture, and from Volutidae in its smooth columella. Its generic location is not known to me." End Verco quote.

We have seen no specimens of this species.

Olivella (Olivella) alba (Marrat) ,1871. Oliva alba Marrat,1871 Thes. Conch., vol.4, Oliva, p.32, no.169,pl.22 (Thes.349)

Keen,Sea Shells of Tropical West America,1958,page 424,figure No. 631, lists the species as follows. " Olivella (Olivella) alba (Marrat in Sowerby,1871). White shells, some specimens with a dark apex, with a widely grooved suture. The species has only recently (Olsson,1956) been established as West American. Length, about 8.5 mm. Margarita Bay,Lower California, to Acapulco,Mexico; possibly to Guatemala." End Keen quote.

Axel A. Olsson, Acad,Nat.Sci.Phil,vol.108,1956,pp.180-181,Pl.8, fig.6, discusses the species as follows. " The shells are small, with a conic spire about half the total length. Sutures are widely-grooved (as in Oliva)without an appressed or overhanging collar. Parietal callus extends to the upper suture,heaviest opposite end of aperture. Pillar structure carrying 3 or 4 large, oblique lirations below and 3 or more shorter ones above. Color white, the apex often much darker. In the explanation for Plate 22 of the Thesaurus, Guatemala is given as the locality for this species. A small lot received from the Liverpool Museum in the Academy collection(ANSP 16018) which are labelled types of alba have the locality label Acapulco? They consist of 4 small shells, more or less weathered and were probably picked out of beach drift. They agree well with the original figure of alba in the Thesaurus.In one shell, the apex is colored gray-black. Another lot in the National Museum at Washington (USNM 182566) identified as alba are from Margarita Bay, Lower California. Nichols collector. The National Museum specimens range from about 7.8 mm. to 9.3 mm." End Olsson quote.

The conclusion is that Tryon was in error when placing this species in the synonymy of O. floralia/other than in part.

Set, in the Burch Coll. ex. Hugh Fulton,Guatemala.

Olivella (Dactylidella) anazora (Duclos),1835 Oliva anazora Duclos,1835,Mon.Oliva,pl.5,figs.3,4- Reeve,1850,Conch.Icon.,vol.6 Oliva,pl.25,figs.74a,b- Marrat,1871, Thes Conch, vol.4,Oliva, p.36, no.189, pl.23 (350), fig.419.- Tryon, Man.Conch., p.69, figs.16,17.

Subgenus Dactylidella Woodring,1928-Type by original designation, Oliva anazora Duclos. " Shell resembling Dactylidia, though the type specimen is larger and more slender. Apertural features as in Dactylidia ,except that the interior of the outer lip bears fine, low lirations." Woodring 1928

(con.)

Olsson, Proc. Acad.Nat.Sci.Phil.,vol.108,1956,pp.187-188 discusses the subgenus and species as follows. " Subgenus *Dactylidella* Woodring Olivellas of medium or large size,slender, with an elevated acute spire. Parietal callus extending upwards to the sutures,thickest at the end of the aperture or just above,the spire whorls covered with a porcellaneous layer of enamel but the sutures remaining open and grooved. Pillar structure much as in *Dactylidia* ,consists of a narrow,weak ridge or platform,wider below and narrowing upward along the parietal wall and bearing along it a few,small plaits in the columellar section. Color in *O. anazora* is formed by a pattern of confluent zigzag, brown lines. Outer lip either smooth or weakly lirated within. Radula not known. The shells are often quite large, in shape like *Agaronia* ,having a high,slender,acute spire. Two known species. Recent. *Olivella anazora* (Duclos). Panamic Pacific faunal area. Fossil. *Olivella paraisa* Olsson ,Miocene of Costa Rica."

"*Olivella* (*Dactylidella*) *anazora* (Duclos) 1835- Shell with a high, attenuated spire tipped with a small ,sharp apex.Greatest diameter of shell placed opposite the end of the aperture. Sutures distinct, widely grooved, in perfect shells overhung somewhat by the sharp edge or margin of the whorl in front. Parietal callus well formed, heaviest above,notched or grooved by the termination of the suture. Pillar structure as described for the subgenus.Color generally brownish,often showing a pattern of fine, zigzag darker lines,more or less confluent.Fascicle generally colored solid brown. Inner side of outer lip smooth or faintly lirated.Columella with a strong keel or fold at the end. Height 18.2 mm.,diameter 7.4 mm.,aperture 5.1 mm. (figured specimen). Duclos figure of this species is taken as typical,and shows the pattern of fine zigzagged lines assumed by the adult shell as well as the deep brown coloration of the fasciole. In shape, the shell is like *Agaronia* with a high,slender spire. Range.- Gulf of California to Northern Peru. Mexico:Mazatlan (Carpenter). Panama: Buuaru;Vedado Beach. Ecuador: Manta;Santa Elena;Puerto Callo. Peru: Lobitos;Zorritos." End Olsson quote.

Keen,Sea Shells of Tropical West America, 1958, p.426,fig.639, discusses the species as follows." This species is type of the subgenus.The shell is shaped like an *Agaronia* , with a high,slender spire.The color is mostly brownish, many specimens with a fine zigzag pattern of darker lines,the fasciole solid brown. The columella has a strong keel or fold at the end. Length, 18 mm.; diameter 7.4 mm. The Gulf of California to Northern Peru; not uncommon." End Keen quote.

Tryon, Man. Conch.,vol.V, p.69,Pl.16,figs. 19-23 defines as follows," Markings similar to those of the two preceding species, (*fortunei* Adams and *leucozonias* Gray) with a form about intermediate between them. I am unable to give a better distinction than the very different locality;indeed,the probability is that the future conchologist, with specimens from more numerous stations, will be able to reduce the number of *Olivella* to a very few, each of them presenting certain types of variation in form and coloring. Length ,8-13 mm. Xipixapi, W. Columbia;Acapulco,Mazatlan. With this I unite *O. pulla* Marr.(fig.19), *O. versicolor* Marr. (figs. 20,21), *O. compta* Marr.(fig.22). *O. capensis* Sowerby (fig.23),said to come from the Cape of Good Hope, can only be separated by its doubtful locality." End Tryon quote.
Note- We are not accepting Tryon's synonymy in full.

Reeve, Conch. Icon., *Oliva*, pl.25,species 74, describes as follows," The Belted Oliva. Shell acuminately oblong,rather inflated, spire exserted,columella callous at the upper part,arched beneath and broadly two plaited,the plaits being divided into numerous other small plaits, of which the upper ones are peculiarly (con.)

interrupted,aperture somewhat effused at the base; whitish,sharply londitudinally waved with brown lines, basal zone fawn-chestnut, columella and interior of the aperture purplish white. Xipixapi, West Columbia (in sandy mud at the depth of ten fathoms); Cuming. This very pretty species is constantly distinguished by its delicate wave-streaked painting and dark brown basal zone. The plaiting of the columella, as above described, is also peculiar." End Reeve quote.

Carpenter,Philip P., Mazatlan Catalogue, 1857, p.469, No. 597, states," Intermediate in character between the elevated, light variety of *O. tergina*, and *O. petiolita*. Known from the former by the acuminate growth,continuity and delicacy of the zigzag pattern, and fineness of the labial teeth. In one specimen the labrum is finely corrugated within. Long.72,long.spir.3,lat 3, div.45°. Hab.Mazatlan: 3 dead sp.only; L'pool. Col. Tablet 2185 contains a sp. tenanted by hermit crab. " End Carpenter quote.

Othe Carpenter references are, Rept. 1856,p.239,292,339; Rept. 1863,p.538. Other references, -Menke, in Zeit. f.Mal.,1851,p.25, no.106- Weinkauff,1878, 36,11,12

H.N. Lowe,Nautilus,vol.47,p.47,1933, reported the species from San Felipe, Baja Calif.

Distribution- Some of the sets of this species noted recently by the Burches are,- Calif.Acad. Sci. sets No. 928, Gulf;No.31415 and 27217, both from Tanacatita Bay, Iden. by A.M. Strong; No.29791 Isla Grande, W. Mexico; No. 17485, Tangola,Tangola Bay, Mex. 5 fms. Crocker-Beebe Exped.--Stanford University, No. 9514,Pequina Bay, Lower Calif.; No. 47076,Magdalena Bay, Lower Calif., C.R. Orcutt. Natural History Museum of San Diego,- Some sets labelled *O. compta* (Marrat) (= O. anazora)- Santa Maria Bay, Lower Calif.,H.N. Lowe, 1932; San Juan del Sur, H.N. Lowe,1931 (these specimens are more slender than most)- Magdalena Bay, Lower Calif., C.R. Orcutt; Magdalena Bay, Dr. Fred Baker; Tres Marias Islands, H.N. Lowe,1930; Acapulco,Mex. in 20 fathoms, H.N. Lowe,1930 (slender form.).

Among numerous sets in the Burch collection are noted several labelled *O. versicolor* (Marrat) (= O. anazora)- large set from Isla Grande, W. Mexico, and several from Panama Bay.

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Olivella (Callianax) baetica Marrat in Sowerby,1871
Thes. Conch. p.35,pl.350,figs.409,410,1871.

The literature on this long contraversial species is very extensive. We are disposed to accept the diagnosis of Dr. Katherine Van Winkle Palmer as stated in the recent work,Type Specimens of Marine Mollusca Described by P.P. Carpenter From the West Coast, Geological Society of America, Memoir 76, pages 217-218, pages Pl. 24,figs.2-4,6-8,1958.

This is of considerable interest because authors for almost a century have credited the species to Carpenter,1864. Other discussions will follow, but first we will quote Dr. Palmer's solution to the problem.

" *Olivella baetica* Carpenter,1865b,p.537,541,590,661;Reprint,1872, p.23,27,76,100,147 nomen nudum; Cooper,Geog.Cat/Moll.,Geol.Sur. California,p.36;Gabb,1869, Pal.California, vol.II,p.75 (boetica) under *O. pedroana* (Conrad); Cooper,1870, Amer.Jour.Conch.,vol.VI, p.68; Marrat in Sowerby,1871,Thes.Conch.,vol.IV,p.35,pl.350,figs. 409,410; Tryon,1883,Man.Conch.,vol.V,p.71,pl.17,figs.28-31,34; Williamson,1892,U.S. Natl Mus.,Proc. vol.15, no.898,p.212,pl.XIX, fig.7;Arnold,1903,p.221,boetica in synonymy of *O. pedroana*(Conrad); Packard 1918,Univ.California Pub.Zool.,vol.14,p.341 under *O.pedroana* (Conrad);T.S. Oldroyd,1921,Nautilus,vol.34,no.4,p.117,pl.V,figs. 1,1a; figs.2,3 varieties (boetica); Dall,1921,p.85,pl.15,fig.1 *boetica*; I.S. Oldroyd,1924,Pub.Puget Sound Biol.Station,vol.4 (con.)

p.88,pl.22,figs.7,8 (boetica) same as T.S. Oldroyd,1921,pl.V,figs. 1,1a(boetica); Grant and Gale,1931,p.627; Berry,1935,Malac.Soc.Lon., Proc.,vol.21,pt.IV,p.263;Baily,1935,West Coast Shells(Keep),p.226, fig.216;Keen,1937,p.43;Burch,1945,no.49,p.17,18,20,pl.III, fig.21; Abbott,1954,p.247,pl.20,fig.q.

Cf. Olivella nota Marrat in Sowerby,1871,Thes.Conch.,vol.IV,p.36, pl.351,fig.428,Vamcouver's Island.

" Narrow, dull,thin; has been erroneously called amazora,tergina, petiolita, and rufifasciata." [Carpenter,1864b,p.661]

Carpenter in the preliminary notes (1864b) to the above listed the species from Santa Barbara(p.537), Monterey(p.541), and in the final list (p.661) from Santa Barbara,Oregon,California,Monterey,Puget Sound,Vancouver, and region between San Diego and San Pedro. One may, therefore, deduce that Carpenter was referring to a ubiquitous coastal Olivella north of the Gulf of California. Carpenter compared his O.baetica (p.590) with Conrad's O.pedroana and his proceedure was followed by Gabb(1869). Carpenter did not later amplifythe above brief and unidentifyable remarks and thereby indicate,as was his custom,particular specimens from a particular locality. This species was never adequately described by Carpenter. It lacked an illustration, a type, and a type locality. Either of the first two items would compendate for the useless descriptive remarks but both are lacking. A review of the literature will reveal that the problem as to the identity of O. baetica as of Carpenter has not been satisfactorily settled. With lack of pertinent original data the problem will not be settled from a Carpenter source. G.L. Wilkins (Oct.17,1950,personal communication) kindly reported on the material of the species in the British Museum (Natural History) as follows: " We have two sets, one of 3 from Vancouver and one of 4 from San Pedro but none of them compare with Sowerby's figure. All Mus.Cuming."

There are in the Gould collection, New York State Museum,Gould Collection A6350,labelled type, 8 specimens of O. baeticaCarpenter. They are all worn individuals. Three retain faint wavy colored lines.With the specimens is a printed Smithsonian Institution label of " Olivella baetica Cpr.= O. petiolita Gld.(non Ducl.) Hab. Vancouver-California." This label is the standard printed form which the Smithsonian Institution used at the time that Carpenter was working for the Smithsonian in making up duplicate collections for distribution.Such labels are familiar to anyone who has examined collections in various museums which received specimens from the Smithsonian in the late 1860's and 1870's. There is then nothing to indicate that these 8 shells were types. Gould's personal number (A6350) on them may mean that they were specimens which Gould identified as petiolita, which Carpenter stated (1864b,p.537) was not the O. petiolita of Duclos (1844,p.5). They do not bear an exact locality. Therefore,so far they do not add any scientific information to the dilema.The specimens are apparently those identified as O. baetica Carpenter, and figured by Dall,Oldroyd, and others. Two are figured herein(pl.24,figs.6-8).

Marrat(1871),p.35,pl.350,figs.409,410;Tryon,1883,pl.17,figs.28,29) was the first to use Carpenter's name with a description,figures, and a type locality. Marrat's (Sowerby) figures were copied by Tryon(1883). Copies of Marrat's figures and description are included herein. The writer,therefore,credits O.baetica to Marrat. This does not apparently upset the usual interpretation of O. baetica and by giving the name a legitimate parent, a definite type locality, description, and figures are thereby gained. Tryon's suggestion that Marrat's O. nota (1871, pl.351,fig.428) from Vancouver Island might be referred to O. baetica looks reasonable. It seems to be(con

the same sort of shell that Dall figured for O. baetica.

" 182. Baetica (f.409,410),Carpenter;petiolita Gould.- Quam O. alectona gracilliusculior,coloribus magis nebulatis variegata;balteo castaneo,fasciato.--The colours with which most of the specimens are variegated are more clouded,and the lines more spread into patches than in Duclos figure of O.alectona, but the difference seems hardly essential.--Ed.[Sowerby]," [Marrat in Sowerby].

Type- " O.baetica" Carpenter,not found. Holotype,O. nota Marrat, is in the British Museum (Natural History),Department of Zoology (G.L. Wilkins,Oct.17,1950, personal communication).

Distribution--Vancouver Island,British Columbia, included Straits of Juan de Fuca(type); Kodiak Island,Alaska to Cape San Lucas, Lower California (Dall)." End Palmer quote.

Tryon, Man. Conch.,vol.V,p.71,Pl.17,figs.28-31,34, discusses the species as follows," Spire moderately elevated,sharp-pointed,body ~~wh~~ whorl oval;red brown or gray,fasciculated upon a white band at the suture; body-whorl maculated or with zigzag markings, and sometimes a white central band,fasciole white,tip of spire frequently dark tinted, Length, .75-1 inch. Coast of California. W.M? Gabb identified this species with the post-pliocene O. pedroana Conrad(fig. 30), which would have priority if identical; a still earlier published name is O. alectona Duclos (fig.34), but I am not convinced that it is the same species. O. nota Marrat (fig.31), said to come from Vancouver's Island, may be referred to the present species with more confidence. O. baetica is a larger, somewhat more swollen form than O. anazora , but not very different." End Tryon quote.

Axel A. Olsson,Proc.Acad.Nat,Sci.Phil.,vol,108,p.196, states, " Distributed along the entire west coast from Cape San Lucas to Alaska, this species, according to Oldroyd and others,grows larger and is more finely marked in the northern part of its range. As fossil, it has been reported as far back as the Pliocene. Range- Kodiak Island,Alaska to Cape San Lucas,Lower California." End Olsson quote,

R.T. Abbott, American Seashells,p.247,pl.20q, discusses the species as follows," 1/2 to 3/4 " in length,moderately elongate, rather light-shelled, glossy and colored a drab-tan with weak purplish maculations often arranged in axial flammules which may be more pronounced near the suture. Columellar callus weakly developed, the lower end with a double ridged spiral fold. Fasciole white, often stained with brown. Early whorls usually purplish blue. O. porteri Dall is the same." End Abbott quote.

D.S. and E.W. Gifford, Nautilus, vol.57, pages 73-80. The Giffords have deposited their collection in the Calif. Acad. of Sci. and the specimens are available for study there. The authors in our opinion were in error in the use of the name O. pedroana for this species, but their population studies were excellent. Some of their findings follow," The commonest colors are Ridgway's olive lake,smoke gray, and light grayish olive...Dredged shells (from the Burches) are frequently reddish brown in general color, a feature also noted for dredged specimens of Olivella pycna.... Certain specimens.. have a lip callus on the inner surface of the body whorl. It is in the form of a ridge lying roughly parallel to the lip and a millemeter or so within, but not extending for the full length of the lip. It is usually white in which case it can be readily seen. But whether white or blending in color with the surrounding surface,it can be felt with a pin point moved transversely over the inner surface of the shell. It occurs most frequently in False Bay specimens, 45 percent of them having it,as against a frequency of only six percent in Anaheim Landing specimens. (575 specimens from False Bay,993 from Anaheim Landing..

From San Pedro, California, 10 fathoms depth, a series of 11 specimens from Mr. and Mrs. John Q. Burch contains two specimens with the lip callus. Off Redondo Beach, Los Angeles County,dredged series from the Burches show the following frequencies: 15 fathoms, 17 specimens, none with callus; 20 fathoms , 118 specimens, 1 with callus; 25 fathoms, 39 specimens, 1 with callus." End Gifford quote.

In Minutes No.49,June,1945 this species was rather fully discussed by many of the collectors of the West Coast. In this issue a letter (personal communication) was quoted from Dr. Joshua L. Baily Jr. as follows," Olivella baetica , frequently misspelled boetica, because the edition of Carpenter's work in which the name was first proposed used a type in which the combination of letters in a single character made the a look more like an o. If this be compared with the termination idae in the same work it will be readily seen that Carpenter spelled the name baetica. When Keep brought out the first edition of West Coast Shells he believed that all forms of Olivella from our coast could be retained in a single species, and so it was not a matter of great importance which form he figured.I believe now that what he figured as baetica is really porteri , but I did not think so when I prepared the revised text. The typical baetica I believe, is the one figured by Mrs. Williamson in Proc. U.S.N.M. vol.15 in 1892.If all specimens were as distinct as these two cuts there would be no doubt that they are a good species. In my collection they are pretty distinct, but I cannot separate them in Dr. Berry's collection, and I doubt if porteri is anything more than a place made of baetica. The name is in the literature and perhaps we will find it necessary to keep it, but I doubt if it is even a good subspecies." End Baily quote.

Olivella porteri Dall,1910 New Species of West American Shells, Nautilus vol.23, pp. 133-134, 1910.

We are following the consensus of opinion among West Coast conchologists and place O. porteri in the synonymy of O. baetica.

However, the name is in the literature and a great many shells are labelled porteri including a fair number in the collections of our largest museums. Therefore, we propose to first state our reasons for abandoning the name to the synonymy , to be followed by Dr. Dall's original description.

A large set is in the Burch collection ex. the late Dr. Fred Baker and labelled, San Diego Bay, topotypes. This set ranges from the very small to very large, near 30 mm. Two other sets from Dr. Baker are labelled " off South Coronado Island,Mexico, in 10 fathoms, and the other in six fathoms. These make a remarkable series ranging from the semi-microscopic to the adult. It is possible to select a series from these lots that would match Dall's description and be recognizably distinct, but the obvious presence of intergrades to the more typical indicates that the proper place for porteri is in the synonymy. Nevertheless, it should be mentioned that Dr. Baker considered porteri a valid species, and most of his conclusions were sound. Grant and Gale consider it a valid subspecies of baetica. However, the opinion of the great majority is well stated by the following terse note of the late George Willett," I think porteri is a variant of baetica of no taxonomic importance."

A few of the sets labelled O. porteri Dall may be of interest. Set No. 19971 in the collection of the Calif. Acad. of Sci. seems to be fairly typical and is labelled Magdalena Bay, Lower Calif., Hemphill. There are a number of large sets in the Natural History Museum of San Diego- San Diego Bay, H.N. Lowe,1928-

(con.)

Ship Rock,Catalina Island,A.M. Strong,dredged in 30 fathoms (reddish cast as mentioned by the Giffords)- San Benito Island,Lower Calif. in 10 fathoms,1939- Pt. Vicente,Calif. in 12 fathoms. ...

Dr. Dall's description follows. " Olivella (Anazora Ducl.var.?) porteri Dall. Shell of about the form and size of the east American O. jaspidea,with very variable coloration; whorls about seven,spire acute with a very deep and narrow chanelled suture not obscured by callus;surface of the whorls brilliantly polished, smooth,except for microscopic spiral close striation which is present on all,but more uniform on particular individuals;color pale olive,yellow, or whitish,with sharp angular axial brown lines superposed between the suture and the basal fasciole,sometimes forming a tent like pattern and sometimes reduced to fine,close, more or less cloudy zigzags; a pale band in front of the suture,usually with vivid brown zigzag pointed forward,but sometimes plain,the brown lines when present broader and stronger than elsewhere; basal fasciole short, with a marginal and an adjacent narrow fold or plait anteriorly, lighter than the body,yellow or rich bluish purple;aperture narrow, simple, with a deep sutural sinus and a moderate parietal callus when mature. Height of shell 15; of aperture 9; max.diam. 6 mm. From sandbars near the entrance to San Diego Harbor, and at Scammon Lagoon, Lower California, Miss J.M. Cooke. U.S. Nat.Mus. 209677. Named in honor of Captain George Porter who collected largely in the Gulf of California, and is supposed to have lost his life at Tiburon Island while on a collecting expedition.

The Scammon Lagoon specimens are more grayish than those from San Diego. The nearest ally to this species is the shell figured by Marrat in the Thesarus, plate 350, figure 419,under the name of anazora Duclos. This, judging by the figure, is a much smaller and somewhat stouter shell,with less distinct markings. The shell represented by figure 411 on the same plate is that identified by Dr. Carpenter and H.Cuming for the Smithsonian collection as O. anazora Duclos,though it is named O. pulla by Marrat. The heavy white callus on the body extending beyond the suture amply distinguishes it from O. porteri . I have not access to Duclos original paper and hence cannot resolve the doubt as to which is Duclos' anazora. The previously known Californian Olivellae were none of them of remarkable beauty,though some of the Gulf species are very attractive,but the present form is one of the prettiest shells of the coast. It may be that its range extends furthur north." End Dall quote.

T.S. Oldroyd ,Nautilus 34,1921,pp.117-119 described two subspecies. The figures are clear and the types are in the collection of Stanford University. The variations are so slight that it is the opinion of all students of the fauna that these should be assigned to the synonymy of typical Olivella baetica. However, for the record we give the descriptions as follows," Olivella boetica diegensis , n. var. Plate V,fig.2. This differs from the typical shells of British Columbia, in the color being a light drab,sometimes mottled; not as oval in outline,spire longer and running more sharply to a point. Length, 19;breadth,8 mm. Type in the Oldroyd collection,Stanford University. Range San Diego to San Pedro; living. Pleistocene in upper San Pedro."

" Olivella boetica mexicana n. var. Plate V, fig.3. This differs from var. pedroana in being smaller,more slender,spire not running quite as sharply to a point. Length ,10,breadth,4 mm. Types in the Oldroyd Collection,Stanford University.Type locality, Scammon's Lagoon,Lower Calif.Pleistocene,the upper San Pedro.Living at San Pedro.Collected by Mr. Henry Hemphill." End Oldroyd quote.

Distributional notes on Olivella baetica-
The habitat of this species is very general. We have taken it in great numbers in certain seasons in the lagoons. In June and also in October we recorded it as being very abundant inside the Estero, below Ensenada,Mexico,but it seems difficult to state a season of the year for it because we have found it in vast numbers for example at San Onofre, Calif. in the rubble reef and sand in November,and in almost unlimited numbers on the sandy beaches between Long Beach and Seal Beach in Jan. and Feb. It is also a common dredged shell. Our experience being to bring it up from as deep as 40 fathoms off Monterey (but more abundant around 20 fathoms). Off Redondo Beach, Calif. and also off Catalina Island in 10 to 25 fathoms, San Pedro in 20 fms.,Ensenada,Mexico in 15 fathoms. We have sets from the late George Willett from numerous stations in southeastern Alaska north to Sitka. Walter J. Eyerdam collected the species from Izhut Bay,Afognak Island, 1922, in 10 fathoms, sandy mud and also Drier Bay, Knight Island,Alaska in 1923, 15 fathoms sandy mud. It is interesting to note that this species becomes very much larger reachings its maximum size in Alaska. One rather remarkable set is in the Natural History Museum of San Diego, from Forrester Island Alaska. These are very large. This lot measures approximately 22 mm. Another set from Alaska attracted our attention because it is labelled, O. baetica var. nota Marrat. We have placed nota in the synonymy, but have seen no other suggestion of using the name for a varietal form. Another set in the San Diego collection is from Ketron Island, Puget Sound. A few of the sets in the collection of the California Academy of Sciences may be noted. No. 28934,Ujak Id., Kodiak Id.,Alaska, beach at low tide, G.D. Hanna and E.L. Tallant; No.28933, off Kamatak Portage Bay,Alaska in 6 fathoms,G.D. Hanna; No. 27603, off San Nicholas Id.,Calif. T.Crocker Exped.,1932; No. 911, San Diego, H. Hemphill; No.27934, labelled, O. baetica diegensis Oldroyd, San Diego, Calif. Iden. by I.S. Oldroyd; No. 17648A O. baetica mexicana T.S. Oldroyd, Cedros Island,Lower Calif. Crocker -Beebe Exped.- Id. by A.M. Strong. ** This set is possibly slightly more obese but the variation from typical seems slight, and we see no reason here to change the = baetica . The Gifford collection in the Calif. Academy contains great numbers of the species from localities ranging from Alaska to Mexico. The records in the Burch collection and notes would be a voluminous repetition of data given above. Perhaps the most suuthern locality in the Burch series is one from San Juanico Bay, Baja Calif., D.L. Burford leg,Jan.,1955.

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Olivella pedroana (Conrad),1856 Pacific R.R. Reports,vol.5,p.327, pl.6,fig.51.- Strephona pedroana Conrad.
The identity of this species has been contraversial for many years. Conrad's brief description follows," Strephona Browne, Oliva Lam.46 Strephona pedroana.. Small,elliptical, about equal in length to the aperture; base of columella with a prominent fold. Locality-Occurs with the preceding (San Pedro). Recent formation. A small abundant species,sometimes water worn, without any prominent character, except the fold at the base,which is more conspicuous, considering the size of the shell, than is usual in the genus." End Conrad quote.

W.P. Woodring,M.N. Bramlette, and W.S.W. Kew, Geology and Paleontology of Palos Verdes Hills, California, U.S. Geological Survey, Professional Paper 207, p.77, discuss the question as follows, " A small, moderately slender species that has a moderately thick and definitely limited parietal callus is identified as O.pedroana. There has been much confusion concerning this name, as the type is lost and the original description and figure are poor. It was (con.)

based on material from the so-called post-Pliocene or Recent formation near the mouth of the Los Angeles River * before the lower course of the river was changed,that is, from the Palos Verdes sand. A specimen selected from a lot of 22 collected at locality 113 (Arnold's lumber yard locality) is designated the neotype (pl.35, fig.22). It agrees reasonably well with Conrad's description and figure. O. pedroana occurs in the San Pedro sand but is more abundant in the Palos Verdes sand. The recently described O. pycna (type locality,Bolinas Bay) is probably a form of O. pedroana .It is stouter than O. pedroana and has a thicker parietal callus. Recent shells in the National Museum,representing O. pycna from localities between Bolinas Bay and San Quentin Bay, are arranged under O. intorta. The type locality of that species is San Juan, presumably San Juan del Sur,Nicaragua, and the description indicates that it is quite different from O. pycna. A slender Olivella that has a thin or moderately thick parietal callus occurs in all the units. It is the species identified as O. baetica.

* Blake,W.P.,Geological Report [Williamson's reconnaissance in California]: U.S. Pac. R.R. Expl.,33rd Cong.2d sess.,5 ex.Doc.78 and H . Ex.Doc.91,vol.5,pt.2,p.186,1857. " End quote. (1946)

R.Tucker Abbott, American Seashells,1954,p.247, describes as follows, " Olivella pedroana Conrad- San Pedro Dward Olive-3/8 to 1/2 inch in length, resembling O. baetica ,but much heavier, much stouter,with a heavy callus, and colored light-buff to clouded, brownish gray with long,distinct, axial ,zigzag stripes of darker brown. Fasciole and callus always white. The lowest columellar spiral ridge is single or rarely double. Moderately common from 1 to 15 fathoms. O. pycna Berry is the same, and matches the neotype designated by Woodring in 1946. Oregon to Lower California." End Abbott quote.

Grant and Gale,Pliocene and Pleistocene Mollusca of California, Memoirs, San Diego Society of Natural History, Vol. I,1931,p.626-627, Pl.24,fig.10, discuss the species as follows. They placed O.intorta Carpenter,1856 in the synonymy. The synonymy of this species will be omitted and considered later. " Olivella pedroana (Conrad)-Arnold,Mem.Calif.Acad.Sci.,Vol.3,p.321,but not all the synonymy, 1903;Dall,U.S. Geol.Survey,Prof.Paper 59,p.32,pl.6,fig.1,1909; Weaver,Wash.Geol.Survey,Bull.15,p.22,1912;Arnold and Hannibal, Proc.Amer.Phil.Soc.,Vol.52,pp.591,594,597,1913; Clark,Univ. of Calif. Publ Geol.,Vol.8,p.423,pl.60,fig.3,1915; Weaver,Univ.Wash. Publ.Geol. Vol.I,no.1,pp.30,32,1916; Martin, Vol.9,p.257,1916; Nomland,Vol. 10,p.221,1917; Dall,U.S. Natl. Mus. Bull. 112,p.85, 1921; E.K. Jordan,Proc.Calif. Acad Sci.,Ser.4,Vol.15,p.245,1926; Oldroyd,Stanford Univ.Publ.Geol.,Vol.2,Pt. 1,p.162,1927; Stephens, Trans.San Diego Soc. Nat. Hist.,Vol.5,pp.251,254,1929.

Type locality: Of pedroana ,San Pedro,California,Recent.

Miocene: Temblor formation,lower middle Miocene (Clark); (Anderson and Martin);Montesano formation,middle Miocene of Western Washington (Weaver); upper and lower San Pablo formation,middle California (Clark);Empire formation, Coos Bay,Oregon (Dall); Arnold and Hannibal; Howe etc.-

Pliocene- Jacalitos,Etchegoin,Merced, upper Sargent etc. of middle California and Coalinga region (Arnold and Hannibal);Martin;Nomland etc.); San Diego well (Dall); lower Pliocene of Elsmere Canyon Los Angeles County (Arnold,1907); lower Pliocene of Holser Canyon, Los Angeles County (English) etc.

Pleistocene: Lower and upper San Pedro series of San Pedro region; Barlow's Ranch, near Ventura;foot of 26th St.,San Diego(Arnold); Santa Barbara to San Diego (Cooper);near International Boundary Monument N o. 258;Pacific Beach (Stephens); upper Pleistocene (con.)

of San Quintin Bay,and of San Ignacio Lagoon,Lower Calif.,Mex. (Jordan,1924,1926: etc.
Recent: Puget Sound to Cape San Lucas,Lower California,Mex.(Dall) 1921 This species has often been reported in the Pliocene and Pleistocene formations of California, but the Recent shell is not so common in collections as might be expected. It is very similar to baetica Carpenter, and the southern part of the living range may refer to the latter form." End Grant and Gale quote.
Grant and Gale figure a specimen, Pl.24,fig.10, " specimen No.206, D.S.N.H., from locality 74,upper Pleistocene terrace southwest of Goleta,Santa Barbara Co.; length 11 mm..."

Axel A. Olsson,Proc,Acad.Nat.Sci. of Phil.,vol.108,1956,p.196, Pl.10,fig.2. Olsson follows others in placing O. intorta in the synonymy, and lists the range from Puget Sound to Cape San Lucas, Lower California. Olsson also lists O. pycna Berry as another species, also figured on his Pl.10,figs.3,3a. Olsson's figure for pedroana is a somewhat more slender shell, with other characters seemingly identical. A question to be asked here is that the figured specimen is from Sitka,Alaska,ANSP.16046, and the figure has the form of the species O. baetica.

Mr. E.P. Chace, curator of mollusks at the Natural History Museum of San Diego, has collected extensively the length of the coast including many fossil deposits. The following notes are from Mr. Chace, (Personal Communication,Dec.26,1958), " Notes on Olivella - Olsson on the Genus Olivella, in Proc. A.N.S.P.,Vol.CVIII,1956. Plate 10,fig.2,Olivella pedroana (Conrad),Sitka,Alaska. This figure is very close to the figure of O. baetica , which Olsson does not figure, but refers to Bull. 112 (Dall), Pl.15, fig.1.Compare these figures. Olivalla pedroana (Conrad). The original description is poor, but states ," spire equals the length of the aperture". Olsson's figure does not look that way-pl.10,fig.2. The San Pedro Pleistocene fossil deposits called Recent by Conrad (upper San Pedro sands) contain three species of Olivella,- O. biplicata(Sby.), a fat shell with a short and somewhat blunt spire- O. baetica , a slender shell with a high pointed spire- O. pedroana (Conrad) , Small,broader and shorter spired than O. baetica, and not as short and stumpy as O. biplicata (Sby.). I have Pleistocene fossils that are quite close to O. pycna Berry. If O. biplicata and O. baetica can both be recognized as both living and fossil, why do we need two names for the other form ??? Woodring in Prof. Paper #207 states that O. pycna is " probably a form of O. pedroana." The late A.M. Strong used the name pedroana for the shells that Dr. Berry named O.pycna. Back to the Olsson article-- He gives almost the same range for O. baetica and O. pedroana. To me this is an indication that his idea of O. pedroana is not correct. I have no records of pedroana or pycna as far north as the range he gives, but baetica does go to Alaska." End Chace quote.

Olivella pedroana (Conrad) has been confused by many with the Olivella intorta Carpenter,1857. This problem has been settled to our satisfaction by Dr. Palmer in the recently published work on the Carpenter types. Discussion will follow. It seems to be clearly a species of the Panamic province. The other name to be considered is obviously Olivella pycna Berry. The question to be answered is clear. Shall we place Olivella pycna Berry in the synonymy of Olivella pedroana (Conrad) or abandon Olivella pedroana as a nomen nudum. It is our opinion that O. pycna = O. pedroana. However, in order to complete the record we will list the opinions of several well known conchologists as given in Minutes 49,pp.21,22,June,1945 to be followed by Berry's very extensive diagnosis.

The following as stated in Minutes #49,p.22,June,1945
Dr. Joshua L. Baily Jr. states our problems very clearly as follows (Per.Comm.,April,1945) " Olivella pycna . When Dr. Berry described this species he made it clear that he was not describing a new species, but only giving a new name to an old species because he was doubtful as to the validity of the two names by which it was already known. I have never seen the type of pedroana Conrad,but I understand that it is a fossil and that it is broken,which is probably why Dall thought it was identical with baetica at one time and with intorta at another. Unfortunately the name pedroana is the oldest name applied to either of our two species of Olivella, and it must be used for one of them.My personal opinion is that since so many people have held opinions at one time which conflict with the opinions held by the same people at other times it is clear that the type is too badly damaged for identification and that the species should be omitted altogether on the ground that the name is a nomen nudum. Dr. Bartsch would not commit himself as to what it might be,but would only say that he thought it was the same as intobta, which was originally given to a Gulf of California species. Whether it was the same as our California species I do not know. It is not impossible that intorta was at one time a widely distributed species that has since become extinct in the middle of the range leaving two geographically distinct habitats. This is the case with Trivia solandri which is found in the northern part of the Gulf but not in the southern part, and also on the coast of the ocean. But it is not likely that this is the case,and therefore it is somewhat doubtful if the name belongs to our Olivella. Therefore, I think Berry did quite right in renaming it, and I prefer to use his name because it is the first name to be applied to it which is beyond all possibility of doubt. All shells from our coast which have been labelled intorta are almost certainly pycna. But pedroana is something of a mystery. Dr. Bartsch suggested that it might be a place mode of intorta. Probably he is right.".End Baily quote.
Mr. A.G. Smith states his opinions on this problem as follows (Per. Comm.,April,1945)" O. pedroana . I agree with Berry that this is unidentifyable without access to the type, which is lost. For a long time I have had the feeling that O. pycna may be the same as pedroana. This point might be settled if some of you southern California fossil collectors discover specimens with enough color left on them to show whether they have the peculiar zig-zag markings of pycna. I have seen plenty of fossil specimens that agree with pycna in shape. With respect to the small Olivellas I agree that Berry is the one to follow,although the last word may not have been said on the problem. It is quite possible that a good case may be made out for calling the large northern form of baetica at least a new subspecies on the basis of size and color markings, especially on the upper portion of the body whorl. My experience with baetica from southern California bays,such as Newport and Mission, is that the colors generally tend to be darker on shells freshly collected. The colors tend to fade after having been in the cabinet for awhile." End Smith quote.
Mr. George Willett states," This is probably Conrad's pedroana be he gave no description, and I agree with Berry that his figure is not identifiable." End quote from Minuted #49.

It should be bourne in mind that all of the above from Minutes #49, was written before the designation of the neotype by Woodring in 1946. The authors may now have different opinions, and have not been consulted.

D.S. and E.W. Gifford, Nautilus, vol.57,pp.73-80,1944,published a careful population study of the species (pycna) . A few of (con.)

the observations of the authors follow," The lip callus frequently present in O. baetica is absent in all of the 1149 Olivella pycna in our collection. The aperture opening is larger in proportion to the shell than in O. baetica which is notably slenderer than pycna. The brown zigzag lines running longitudinally on the shell vary in spacing and in the extent of the zigzag or wave. In some cases the lines are veiled by glacoud gray or olive gray ground color, which seems most prevalent in the older and thicker shells...A color character not mentioned by Dr. Berry but occuring in 72 percent of our specimens is a maroon or reddish brown spot,sometimes obsolete or veiled by white,beside the fold at the base of the columella..." End Gifford quote.

Distribution- A set in the Natural History Museum of San Diego from the A.M. Strong collection, labelled Cayucos, California, and also assigned to Olivella pedroana (Conrad). These specimens are obviously the same species known as O. pycna Berry. Another large set is from the San Pedro Pleistocene of Knob Hill,San Pedro. This must be close to the type locality of O. pedroana. It seems to be impossible to separate these shells from the Recent O. pycna. Some of the sets in the Burch collection include hundreds of spec--imens off Morro Rock,San Luis Obispo Co.,Calif. in January,1937. Also a seet dredged by the Burches off Pacific Grove,Monterey Co. in 15 fathoms. Large sets from Cayucos,Calif.- Bolinas,Marin Co., Calif. Those interested in a very large series of probably several thousand specimens from many localities should study the Gifford collection in the California Academy of Sciences. A few of the sets in the Gifford collection follow- Paratypes, Bolinas Bay, Calif. in 3-4 fathoms; Stinson Beach,Marin Co.; Tomales Bay,Marin Co.,June 1, 1946 (large, more robust shells); Santa Cruz,Santa Cruz Col,March 21,1948 (typical); Crescent City,Del Norte Co.,Calif.,Aug.,1942 (typical); Monterey,Calif,1942; Princeton,San Mateo Co.,Feb.23, 1944;Port Orchard,Oregon,June 10,1941,Seaside,Clatsop Co.,Oregon, July 9,1948;Mendoza Ranch, Drakes Bay,Marin Co.,Calif.,June 2,1946.

In due course it is our intention to publish a series of photographic plates illustrating many of the species discussed. With this in mind we have included in our papers many complete quotations from authors. Some of the references are from rather obscure publications and difficult to find by many students. In this way we can give our readers both sides of a controversy, and they may agree or disagree with our conclusions. In fact, we are disposed to cheerfully accept a proper criticism of any of our observations.

Olivella pycna Berry,1935 Proceedings of the Malacological Society of London, Vol. XXI, Pt. IV, pp.262-5,March,1935. An Undescribed California Olivella.

The description and discussion of the author follows," After pro--longed study I can cortrive no better way out of the confusion apparent in the nomenclature of some of our Californian species of Olivella than the description of one of them as new. Description: Shell small,heavy,elongate-nuciform,widest near the middle, the spire tapering almost straightly to an acute point;anterior extrem--ity trundate. Whorls seven,their slopes nearly straight on the spire,the body whorl large and strongly convex. Suture,sharply, narrowly, and deeply channelled. Aperture about three fifths the length of the shell,the outer lip sharp and distinctly arcuate,its obtuse anterior lobe slightly exceeding the columella anteriorly past the short notch-like canal. Parietal wall covered by a strong white callus,heaviest and of greatest extent posteriorly where it rounds rather abruptly to pass under the free and overhanging

(con.)

outer lip just in front of the sutural channel,the parietal callus not passing the suture but confluent in the channel with a second low callus just posterior,developed as the terminationof a low calloused band which bounds the channel posteriorly and covers about a third of the adjoining whorl before its gradual and final dissapearance. Columellar fold moderately heavy,usually distinctly duplex but sometimes single,the columellar and extreme anterior region covered by a third white callus which is overlain near the aperture by the parietal callus.Surface smooth,lustrous,under magnification seen to be very finely and closely covered with minute wavy spirals on the uncalloused portions which are again minutely decussated by the numerous fine lines of growth. Parietal callus minutely punctate. Colour light brownish buff (usually quite near Tilleul Buff),clouded brownish,though usually with a rather wide buff spiral band persisting below the suture,the whole conspicuously ornamented by numerous highly irregular vertical wavy stripes of Fawn Colour or Army Brown,with occasional suffusion of Light Vinaceous Drab;interior,except the buff lip-margin,Walnut Brown to Cameo Brown;callous portions white as noted. Holotype: Cat. No. 7655,Berry Collection. Paratypes: Cat. No.2900 Berry Collection; others in the collections of Stanford University,The Academy of Natural Sciences of Phil.,the United States Natl. Mus., the British Museum, and the San Diego Museum.

Measurements:	Long. mm	Maj. Diam. mm	Outer Lip mm	Whorls
2900 Paratype	15.4	7.6	8.8	7
7655 Holotype	13.6	7.5	8.4	7
2900 Paratype	12.2	7.0	8.2	6+

Type locality: Bolinas Bay,Calif.;taken by trawl in 3-4 fathoms; F.W. Weymouth, 22nd June,1911.

Additional Localities: 15 fathoms off Moss Landing,Monterey Bay, Calif;S.S. Berry,June 1906 (Berry Coll. No. 1189),5 fathoms off Point Bonita,California; F.W. Weymouth, 21st June,1911(Berry Coll. Cat. No. 3316)

Remarks: This is an exceedingly distinct little olive shell, not closely allied to any of the other West American forms so far as they are known to me. The heavy shell,stumpy form, and dull lustre are distinctive,while the peculiar striping of the colour pattern and the details in the formation of the callus are further characteristic features. It is uncommon in collections but has long been known,confounded by all writers since Carpenter with either *intorta* Carpenter or the questionable *pedroana* Conrad.Compared carefully with the description of *intorta*, the abrupt posterior termination of the parietal callosity in the present species alone suffices to reveal it as something quite different. intorta is not onlya much more southern species but is expressly described by Carpenter (Gould and Carpenter,1857,p.207) as having the callus extending to the suture parietally and thus hiding the colour of the spire. Therefore, one must strongly doubt whether any of the alleged records of *intorta* from Upper California have anything to do with that enigmatical but probably purely tropical species. Its original and certainly only known locality is Cape San Lucas.

O. pedroana Conrad is perhaps more to be taken into consideration, but students are far from unanimousas to what particular form Conrad intended to describe. In any event both his figure and the great majority of fossils from the San Pedro region that I have been able to examine represent a smaller and decidedly less robust and less heavily calloused shell than the living specimens here described. Conrad's figure is so indefinite in character and so poorly drawn that it might represent in about equal degree either an uncommonly robust specimen of *baetica* Carpenter or a small (con.)

and somewhat narrow shell of the present species. The latter interpretation finds poor support,however,in the context, as the all-too-brief description attributes to its subject a shell with the spire " about equal in length to the aperture", and then proceeds to state that it is an " abundant" species in the San Pedro formations, which last can surely only be said of either biplicata (Sowerby) or the species subsequently described as baetica by Carpenter. That pedroana is with difficulty identifyable, if, in fact, recognizable at all, is well brought out by a perusal of its subsequent adventures in the literature. For many years it was generally ignored by writers on the Recent fauna. Arhold, in 1903, however,interpreted pedroana as the oldest available name both for the fossil and recent shells commonly known as baetica Carpenter,and this usage was subsequently accepted by Dall(1909),Packard (1918), and others. In this connection Dall (1909,p.33) has the following to say: " Carpenter noted that a comparison between his baetica and Conrad's species was desirable and Arhold has united them. Conrad's type is not preserved his figure is poor,and his description is quite insufficient,but there is little doubt that baetica is synymomous with it,since it is a choice between three possible species,two of which cannot be reconciled with O.pedroana ,while topotypes from the original locality are undoubtedly identical with O. baetica." This dictum seems sufficiently positive, yet a few years later (1921) we find its writer in reverse gear,restoring baetica to standing and using pedroana in place of intorta. He offers no explantion whatever for this change of view, which is none the less followed by Oldroyd (1924) and Grant and Gale(1931). The account offered by the last named authors(1931, p.626) is aa perfect epitome of the prevailing confusion,for whereas they include both the penninsular intorta and the living Central Californian form in the synonymy of pedroana, they further add in commentary that baetica " may be only a variety of it,an opinion quite conceivable as respecting certain of the fossil shells which rightly or wrongly have often passed under these names,but hardly to be entertained if one but compares fresh perfect shells. Published distributional records are equally confused and probably should not be too implicitly quoted without a careful check of their sources. However, Packard's records(1918, p.340) for intorta almost certainly belong to pycna although his figure (pl.37,fig,7) is not so well executed that it is entirely representative. Williamson (1892,p.212,pl.19,fig.9) gives a better figure,likewise under the name intorta, but fails to state whether the figured specimen actually came from San Pedro."
End Berry quote.

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Olivella intorta Carpenter,1856-57 Carpenter in Gould and Carpenter, Proc. Zool.Soc.Lon., pt. XXIV,p.207.

When we last considered this species it was in Minutes No.49,June, 1945,p.23, and our conclusions were nil. The statement made at that time follows and is self explanatory, " This specific name is of particular interest because of the very common belief that this species,pedroana and pycna are perhaps identical,and there are countless sets of shells around with the label intorta, and no one quite certain what it is. ".

Dr. Katherine Van Winkle Palmer in her recent book,Type Specimens of Marine Mollusca Described by P.P. Carpenter from the West Coast, Geol.Soc.Am.,Memoir 76,1958,p.219,Pl.24,fig.5, has given a solution to this problem as follows, " Olivella intorta Carpenter,1857 Rept.British Assoc.Adv.Sci.,1856,p.228,234,339,352; Carpenter in Gould and Carpenter,1856,Zool.Soc.Lon.,Proc.,pt.XXIV,p.207;Carpenter,1860,Smith.Misc.Coll.vol.2,art.6.p.11 " Mexican and (con)

Panamic provinces", not Cooper,1867,Geog.Cat.Moll.,Geol.Sur.Calif., p.36,; not Cooper,1870,Amer.Jour.Conch.,vol.VI,p.68;Marrat in Sowerby 1871,Thes.Conch.vol.IV,p.36,pl.351,fig.455;Tryon,1883,vol.V,p.66,pl. 14,fig.62 copy Marrat; Keep,1887,West Coast Shells,p.42;Williamson, 1892,U?S. Nat.Mus.,Proc.vol,15,no.898,p.212 in part, not pl.XIX,fig. 9;Arnold,1903,p.220 in part; not Packard,1918,Univ. Calif. Publ. Zool.,vol.XXI,pt.IV,p.264;not Oldroyd,1924,Pub.Puget Sound Biol.Sta. vol.4,p.88 under O. pedroana Conrad;Grant and Gale,,1931,p.626 in part under O. pedroana; Berry,1935,Malacol.Soc.Lon.,Proc.,vol.XXI, pt.IV,p.263 discussion of O. pycna; Baily,1935,West Coast Shells, (Keep), p.227; Burch,1945,no.49,p.23; Woodring,Bramlette, and Kew, 1946,U.S. Geol. Sur.,Prof. Pap.207,p.77; Smith and Gordon,1948, Calif. Acad. Sci.,Proc.ser.4,vol.XXVI,p.185.

" O. t. parva,ovoidea,subtumente;sutura vix sulcata;albido&grisea, fascia indistincta subsuturali olivacea,flammulis et maculis purpureo-fuscis plus minusve ornata;apertura antice,aperta,postice angusta;callositate parietali ad suturam penultimam producta;columella maxime intorta,plica ad basin acuta, in pariete duabms saepe indistinctis;extus, linea spirali antica unica.
Long. .52, spir..17,lat..26, div.60°.
Hab. San Juan; legit Dr. Green,Mus.Gould,Item, loc.incert.Mus Cuming
A well marked species, resembling the West Indian O. bullata,on a much larger scale. The specimens vary in tumidity and height of spire. The parietal callosity extending over the penultimate whirl [sic] hides the colour of the spire." [Carpenter,1856d,p.207].

The specimen figured by Marrat (in Sowerby,1871) is the first specimen mentioned by Carpenter. It is extant in the type collection of the British Museum (Natural History). It has a label,"San Juan, California Dr. Green" Mus.Cuming (G?L. Wilkins, Oct.17,1950,personal communication). The authorities of the British Museum generously furnished the included photograph of the type.

The specimen figured by Williamson (1892) is one of several, no. 47202, U.S. National Museum, from Santa Cruz,California,collected by Stearns. Under the present understanding of the species, it therefore,would not be included under O. intorta.

Holotype.-British Museum (Natural History). Department of Zoology. 11.9.2.

Distribution-San Juan,* Lower California (type)

Carpenter definitely put the San Juan of this locale in the Gulf of California region. He enumerated the other San Juans which might be confused with the one under consideration.

* - Carpenter (1857b,p.228 San Juan;p.234 San Juan;p.339,Gulf of California;p.352San Juan;p.168 Loretto and Bay of San Juan,26.5° [Gulf of California]; p.168, " Besides this station [Bay of San Juan] and the Straits of De Fuca,there is a San Juan on the opposite shore near Guaymas; another near San Blas; a Point on the coast near Lake Nicaragua; and a little island between Is.Catalina and San Diego.")

End Palmer quote.

It seems that this species must remain an enigma. The figure shows the character mentioned," The parietal callosity extending over the penultimate whorl...". This would seem to definitely take it away from any form of O. baetica.

Genus *Olivella* Swainson,1831
Subgenus *Callianax* H. and A. Adams,1853
The *original description* of Adams follows: "Sub-gen.*Callianax* H. and A. Adams (Olivina,Mörch, not D'Orb.)- Shell *not polished*; spire produced, acute,suture channelled;aperture wide,effuse in front;callus of inner lip thick,defined;columella simple,or with a very few plaits anteriorly-- *biplicata* ,Sow- *columellaris*,Sow.- *semistriata* Gray--*zenopira* *Duclos.*" End Adams *quote.*

The diagnosis of *Axel A.* Olsson,Proc.Acad.Nat.Sci.Phil,Vol.108, p.195 follows, " Subgenus Callianax H. and A. Adams,1853 .Type by subsequent designation,*Cossmann,1899*,*Oliva* *biplicata* Sowerby. Shell large or small, stout with a *moderately high* spire.Parietal callus extending to the end of the aperture or but a short ways above it.Pillar structure is a heavy fold at the end of the columella smooth or plaited.Fasciole divided,the upper segment generally narrow.Inner walls of the spire whorls fully reabsorbed.Radula with 38 to 40 rows of teeth,the central or rhachidian tooth fairly large with a saucer-shaped base,multicuspidate,the three middle cusps quite large,the others smaller and diminishing towards~~s~~the ends;the lateral teeth curved uncinate or broadly hatchet-shaped, with a wide notched base and a pointed or knobbed end;the third or accessory tooth of rectangular form,much thicker at the inner side... *Callianax* is typically a West American group of Olivellas but *certain* Atlantic species are referred to it tentatively,pending information on the radula of the Recent forms." End Olsson quote.

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Olivella *biplicata* (Sowerby),1825- --*Oliva* *biplicata* Sowerby, *Cat. Shells Tankerville*, Appen. p.33,1825.
Reeve,Conch.Icon.,Vol.6,*Oliva*, pl.20,fig.48,1850,defines as follows, " " The Two-Plaited *Olive.* Shell abbreviately ovate,thick,stout, slightly striated longitudinally,spire short,columella arched, smooth,callous at the upper part,two plaited at the base,aperture effused at the base;bluisj grey,sutures brown,columella and base deep violet,aperture blue grey,violet at the edge. Hab.-Monterey, California (in the sands at low water); Hinds. Well distinguished by its short obese growth, and two basal columellar plaits." End Reeve quote.
Tryon, Man. Conch.,Vol.V,p.87,pl.34,fig.58, " Bluish gray,sometimes light brownish or olivaceous,fasciole and interior of aperture violaceus;columella biplicate at the base. Length, .75-1.25 inches. California." End Tryon quote.

The following synonymy and discussion are from Grant and Gale, 1931,Mem.San Diego Soc. Nat. Hist.,vol.1,pp.625-626,pl.24,fig.15.
" Swainson,Treat.Malac.,p.82 ("*Olivilla*" by mistake),pp.133,322, text fig.3,1840;Cooper,Seventh *Ann.Rept.*,Calif. State Mineralogist, p.255,1888;Arnold,Mem.Calif. Acad.Sci.,Vol.3,p.219,1903; Keep, West American Shells, Rev. Ed.,p.138,text fig. 112,1911;Nomland, Univ. Calif. Publ.Geol.,Vol. 10,p.221,1917;E.P. and E.M. Chace, Lorquinia,Vol.2,p.42,1919;Dall,U.S. Natl. Mus.,Bull. 112,p.85, 1921; T.S. Oldroyd,Proc. U.S. Natl.Mus.,Vol.65,Art.22,p.11,1925; E.K. Jordan,Proc.Calif. Acad. Sci.,Ser.4,Vol.15,p.245,1926;I.S. Oldroyd,Stanford Univ. Publ. Geol.,Vol.2,Pt. 1,p.160,pl.26,figs. 20,20a,1927;Waterfall,Univ. Calif.Publ. Geol.,Vol. 18,p.78,1929; Stephens,Trans.San Diego Soc. Nat.Hist.,Vol.5,pp.252,254,1929.
Pliocene- Twelve Mile House,San Mateo County;San Diego Well,San Diego (Cooper);common in *Pecten* *coalingensis* zone of the lower Etchegoin of the Coalinga *region;* *lower Merced* and upper Sargent of middle California(Nomland,1917; " Pico" near Ventura(Waterfall); etc. (con.)

Pleistocene- "Pliocene" of San Pedro Region(Arnold);common in lower and upper San Pedro beds(Arnold);T.S. Oldroyd, also as variety angelona ; Point Firmin,Los Angeles Co.,(Chace);Santa Monica palisades(F.C. Clarl collection); Pleistocene of Ventura (Arnold);Pacific Beach and foot of 26th St.,San Diego,(Stephens); upper Pleistocene,Campbell Ranch,near Goleta,Santa B arbara County(U.S.G.); lower Quaternary of Magdalena Bay and upper Pleistocene of San Quintin Bay,Lower Calif.,Mexico (Jordan) : etc.
Recent:- British Columbia to Lower California, Mexico." End Gra
This is a rather stout,heavy-shelled species, with from one to four plicae on the base of the columella, above which there appears to be an excavation. It is common in many Pleistocene localities in southern California. It is heavier,larger, and less elongate than baetica. It is not probable that the strains of the various named minor variants could keep pure in view of their known ranges." End Grant and Gale quote.

Axel A. Ollson,1956,discusses the species as follows," This species is common along the Californian coast where it is known as the " Purple Olive". The shell is quite large(length about 23 mm.) solid with a large,broad body-whorl and a conic,elevated spire,the whorls 6 or 7, tipped by a small,elevated,glassy nucleus.Color often pure whitebut more often in shades of gray and brown, the sutures lined,brown. The upper band of the fasciole is generally brown,the outer lip edge with brown but stained with purple in the interior as is also the columellar pillar. Radula as described for the subgenus. A ribbon extracted from a specimen submitted by Dr. A.S. Fischer shows the following characteristics: length 3 mm.,width 1.00 mm., width of a rachidian tooth .4 mm. It shows 38 rows of teeth. ..Olivella biplicata is a very distinctive and outstanding species,recognized by its relatively large size,thick shell and stout form. It is reported as common at many localities along the Californian coast, as well as being an abundant fossil in some Pliocene and Pleistocene beds in southern California.Several varieties or subspecies have been described; references for these names may be found in the complete synonymy given by Grant and Gale.. Range.State of Washington(47° 308 N. Lat. A.M. Keene) to Lower California." End Olsson quote.

A number of varieties of this species have been described. It is our opinion that none of them are of the slightest systematic value, but for the record here we will mention them with the references and descriptions. We are placing all in the synonymy.

Olivella biplicata alba Williamson,1892- Williamson,Mrs. M.Burton, Proc. U.S. Natl. Museum, Vol. XV,p.212.
No description was given, the only note being " Seldom found". However, it is assumed that the name referred to a white form. The name alba , being a homonym of alba Marrat, inspired Vanatta to describe the form as lapillus. This will appear later.

Olivella biplicata var. brunnea Williamson,1892- Ref. as above. Mrs. Williamson states of this," This brown variety is rare, and not found living. Dr. Cooper says O. biplicata " varies in color from black through brown,purple,gray and pink to white." End quote.

Olivella biplicata lapillus Vanatta,1915. Vanatta,E.G.- Nautilus, Vol.29,pp.71,72,1915. The description of Vanatta follows,
" Shell globose,white,spire short,interior of the aperture cream colored. Alt. 24,diam. 14 mm. The type is A.N.S.P. Coll.No.111977 from San Pedro,California,collected by Mrs. E.M. Gaylord. It is the Olivella biplicata alba Williamson (not Marr.) It is figured (con.)

in Sby.,Thes.Conch.IV,pl.18 (345),f.290.Some specimens have lilac on the columella." End Vanatta quote.

Olivella biplicata angelena T.S. Oldroyd,1918. Nautilus,Vol.34, p.34,1918. The description of Oldroyd follows," This variety differs from Sowerby's type in being more delicate and slender,with callous not so heavy,spire more elevated,sloping more gradually from the middle of the shell to the apex. Sowerby's type came from Monterey and does not occur near San Pedro living,but is found fossil there in the Pliocene and lower Pleistocene. Variety angelena is found fossil in both the upper and lower San Pedro beds of the Pleistocene. Length of type 27,width 13 mm. Type in the Oldroyd collection, Stanford University." End Oldroyd quote.

Olivella biplicata fucana T.S. Oldroyd ,1921 Nautilus,Vol.34, p.118,pl.5, fig.4 The description of Oldroyd follows," Shell broader across the middle and lower part of the aperture than var. angelena; spire running more sharply to a point from the middle of the shell. Color more uniform,being a light drab. Length ,28;breadth 14 mm. Type in Oldroyd collection,Stanford University. Living. Type locality,Straits of Fuca, near Cape Flattery. Pliocene at San Diego." End quote.

Olivella biplicata parva T.S. Oldroyd,1921. Nautilus, Vol.34, p. 119,pl.5,fig.7,1921. The description follows," This var. is nearest angelena,but much smaller, a little broader in proportion; outer lip more curved,shell more highly colored and variable in color;found in the upper Pleistocene at San Pedro. Length,14;breadth 8 mm. Type in the Oldroyd collection,Stanford University. Type locality,Point Abreojos,Lower California. Collected by Mr. Henry Hemphill." End Oldroyd quote.

Dr. D.S. and E.W. Gifford have contributed several very fine papers that should be consulted by those interested in the color forms of this species.-" Color Variation in Olivella biplicata", Nautilus, vol.55,no.1,p.10--" Color Variation in Olivella biplicata in Various Localities",Nautilus,vol.56,p.43-- " Californian Olivellas",Nautilus, vol.57,p.73. The Giffords made a very thorough population study from a collection of 2557 specimens taken at Bolinas,Marin County,California. Of the lot all but one (a xantho--choistic specimen) had varying amounts of bishop purple colorabout the aperture,especially near the base of the columella. Another division made on the basis of the presence or absence of orange coloring within the aperture, 299 had varying amounts of orange, 2458 (including the 94 very young shells) lack it. Of the 2458 shells without a trace of orange within the aperture, 177 (7.2 per cent) are albinos, 2280 are in the range of normal color.The animals in the albino shells look like those in normally colored shells. It is noted that in young shells of the normal color the color of the dorsal side is normal, but streaked with wavy brown on the ventral. This juvenile characteristic dissapears as the shell grows older. In some young shells a whitish band is noted below the suture separating the body whorl from the second whorl. In the fully adult it dissapears.

This species was rather fully discussed in Minutes of the Conch. Club. of So. Calif.,No.44,pp.19,20,June.1945. This data will not be repeated in full here.

(con.)

Distribution of Olivella biplicata (Sowerby)- The species seems to be seasonably abundant in certain places. For example, it is possible to collect them by the bushel if desired in Morro Bay and other lagoons during the months of June,July, and August. They are almost always present but apparently not in such large numbers. The habitat is just beneath the surface of the sand. They may be easily detected by the trail they leave. With a large screen and spade it is possible to collect great numbers in a very short time. Our experience has been to find them a common species from Washington to far down the outer coast of Lower California,Mexico. The most southern set in the Burch collection is from San Juanico Bay, Baja California,Mexico, D.L. Durford leg.,Jan.,1955. However, they no doubt range farther to the south. We have taken them in almost all possible habitats. We have taken them on sandy beached along the open sea, in rocky rubble and in algae, in muddy lagoons, and the bathymetric range is of some interest. We have picked up this species in our dredged in at least 20 fathoms off Monterey, in 25 fathoms off Redondo Beach, and from shale,sand, and gravel bottoms. A list of collecting localities would no doubt cover the entire coast.

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Additions or Corrections

Olivella dama (Mawe) 1828- Ref. Min. 185,pp.6-8.
A single specimen of a perfect albino of this species was taken alive by Mrs. Dorothy Brown at Chollo Bay, Black Mountain Beach, on Feb. 25,1959. This is the first living albino we have seen.

Oliva incrassata (Solander,1786) Ref. Min. 184,pp.17-18.
Mrs. Dorothy Brown has joined the exclusive club of those who have the albino form of this species. The specimen is pure white and was taken in the vicinity of San Felipe, Baja Calif. This is the varietal form given the name of nivea Pilsbry. Specimmns partially white seem to be more or less common.

Mrs. Brown mentioned another matter of passing interest regarding the O. incrassata. It seems that one of the commercial dealers has placed an order for five tons of these shells. The result is that the citizens of Baja Calif. interested in such collecting are scouring the intertidal for them. What effect such a vast gathering may have on the colonies will be of interest. It may be added that some of us are more than curious to know ahat possible market there can be for such amazing lots. A minute percent of them would supply every known shell collectors cabinet in the known world.

MINUTES

Conchological Club of Southern California- March 3,1959

The meeting was called to order at 7:30 P.M. by the president,Dr. Donald Shasky. There were 67 members and guests in attendance. The minutes of the Feb.3 meeting were read and approved after correcting as follows: the treasurers report was changed to read $62.02. Dr. Wendell Gregg was inserted as chairman of the Constitution Committee, and the date of the last publication of the constitution was changed to read 1939. Mr. Crawford Cate, program chairman, introduced the speaker of the evening, Dr. Richard Boolootian, UCLA, whose topic was sea otters. Dr. Boolootian started his graduate work on echinoderms at Hopkins Marine Station of Stanford University in 1953. In order to work on the blood of sea urchins he had to collect living animals. In doing this he ended up at Yankee Point at the south end of Pt. Lobos State Park where he noticed a sea otter moving in and out of a channel and feeding upon sea urchins. Upon inquiry he was told by park ranger Whitehead that 65 sea otters were living at the southern limits of the state park.Dr. Boolootian became deeply interested in checking the area from a helicopter he counted 78 animals instead of the anticipated 65.One thing led to another and soon he was spending many hours observing this herd of sea otters from the nearby shore. They were noted to lie at the surface on rafts of kelp (*Macrocystis* and *Nereocystis*) ,and would not leave the kelp even under the most adverse conditions, including storms,killer whale attacks,shark predation, etc. They were never observed to climb out onto dry land. It was pointed out that in the late 1700's and early 1800's sea otters ranged from the Aleutian Islands south to Scammons Lagoon. On the south they were slaughtered (for their pelts) by the Mexicans,in the middle by Indians and early white settlers, and on the north by Aleuts. Their pelts were the finest known and their exploitation probably had more to do with the early settlement of California than did the lure of gold. A single sea otter fur was known to have sold in England for $4000 to $4500. Efforts, gotten under way around 1910 by several federal and state agencies, to obtain maximum protection for sea otters were successful in 1913,This law did not go into effect,however,until two years after the last living sea otter was thought to have been killed just north of Hopkins Marine Station. They were next brought to public attention in 1938 when a Mr. and Mrs. Sharpe, while checking a new pair of binoculars near Bixby Creek, saw some strange animals in the kelp offshore and notified the authorities.Personel from museums,universities, and such made a full investigation and found not only were these strange animals sea otters but there wre 300 living in small herds between Carmel and San Simeon. Thus the sea otter was rediscovered. Dr. Boolootian's interest was now taken up full time by sea otters and the work program he laid out included censusing them and observing their habits over an extended period. He spent all of the daylight hours during an entire month on a nearby shore observing a herd of 50 animals/. In a month's time these 50 sea otters ate 5280 sea urchins,*Strongylocentrotus franciscanus* (they ignored the smaller purple urchin, *S. purpuratus* which was also abundant in the area), 3011 black mussels, *Mytilus californianus* ,380 red abalone,*Haliotis rufescens*, an occasional perch (Embiotocidae), numerous tubeworms,kelp holdfasts, and crabs, especially *Pugettia* sp. The average sea otter adult is 3 to 4 1/2 feet long and weighs 45 to 85 pounds. The hind feet are webbed but the forelimbs are similar to a dog's in shape and dimensions. The neck is short and stout, as is the snout, and the crown of the head is not prominent. In profile the head of the sea otter resembles that of a harbor seal, but they do not belong (con.)

to the same order of animals- sea otters being Carnivores (order Carnivora). They break sea urchins open by using their forepaws and canine teeth. For mussels and red abalones, a different system is employed- namely,holding the mollusk in the forepaws and pounding it on a flat rock the otter has placed on his chest while floating on his back at the surface of the water. This is the only mammal, other than man, known to employ a tool in obtaining food. They feed primarily between sunrise and 10:00 A.M. and between 4:00 P.M. and dark. Between 10 and 4 68clock they rest on the patches of floating kelp that lie just offshore. They have been reported diving to depths of 300 feet to obtain food and in the same areas where they were observed by Dr. Boolootian they brought food items up from depths of 40 to 120 feet. Although they feed upon abalones, they have not been found to be excessively destructive of the offshore abalone beds. They do, however,literally clean out the sea urchins in a feeding area before moving on to another. In 1957, Dr. Boolootian counted 637 sea otters in a number of herds spread out between Pt. Conception and Carmel.Since he completed his studies there have been reliable sightings of otters just south of Pt. Conception, at Anacapa Island, and just north of San Francisco. Although fully protected since 1913, a few sea otters are killed each year by poachers and such.At the present time efforts are being made to give them even further protection by establishing a sea otter refuge along a portion of their range. At this point Dr. Boolootian terminated his discussion and showed a very fine color movie (in sound) of bobbing sea otters.

At the finish of the movie Crawford Cate briefly explained the fine collection of Brazilian sea shells that he had brought for display. He had obtained these by exchange (since June,1955) with a Brazilian chemist, Dr. Eliezar de Carvalho Rios of Rio Grande Do S Sul.

John Fitch announced that he had brought some copies of his recently published booklet " Offshore Fishes of California" for those who were interested.

Rose Burch read a short timely item on the significance of conservation and made a motion that the Conchological Club of Southern California go on record as supporting fully the aims and ideals propounded by Conservation Week. The motion was seconded by Crawford Cate and carried unanimously.

It was announced by Sandra Delp that she had brought a box of shells for distribution to those who were interested. This announcement alone nearly broke up the meeting, but as a final item of business before the break, Rose Burch introduced the many guests who were present. After a 15 minute smoking break from (;05 to 9:20 P.M. , Emory Chace,Rose Burch,Dorothy Brown, and John Fitch, reported upon field trips they had taken since the last meeting.

John Burch in reporting new publications briefly discussed the importance of Dr. Palmer's " Type Specimens of Carpenter" which is just off the press.Carpenter, in his time,described over 500 species from the Pacific Coast and few of these had been illustrated pri or to this important contribution by Dr. Palmer. Several other publications were also brought to the attention of the group,including the description of a new Astraea by Dr. R. Stohler. Dr. Shasky reported upon the recent entries for honors in the Lost Operculum Club. Faye Howard and Dr. Shasky displayed several of the prize giants they were entering into competition. The door prize was won by Bruce Campbell.The meeting was adjourned at 9:55 P.M.

Respectfully submitted, John E. Fitch,Secretary.

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Noting the signatures on the guest book of the Burche's, it may be mentioned that it has been our pleasure recently to entertain Mr. H.J. Koch and his business associate Mr. George Mokusi from Johannesburg, South Africa; Mr. and Mrs. Albert R. Lincoln from Canton Island; Mrs. Jean Kauanui from Wake Island; Mrs. Anna Harris from Honolulu (new state of Hawaii).

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Publications Received

The Zoological Record, Vol. 93, Sect.9,1956, Mollusca- 149 pages. The work is very well done and will obviously be indispensible to all serious students. Mr. A.E. Salisbury is to be sincerely congratulated for such an excellent publication, and no doubt this should be extended to his assistant, Marcia A. Edwards.

Gastropodia, Vol. 1, No.3, Feb.14,1959, pp.21-28. G.R. Webb, Box 335,Everman,Texas. It has been some time since we received the last installment of this work, and it is pleasant to know that the author is continuing his work on the anatomical details and mating of land mollusks.

Late Pleistocene Invertebrates from Punta Cabras,Baja California, Mexico, by Warren O. Addicott and William K. Emerson, American Museum Novitates, No. 1925. Feb.26,1959. 33 pages, 8 ill.
This is a very thorough paper and quite interesting. The authors discuss the climate, cool water upwellings,and the chapter on the use of radiocarbon evidence to determine the approximate age is well done and something comparatively new in such work.

Basteria-Nederlandse Malacologische-- Vol.22, No. 4 en 5,pp.69-108,
The papers contained in this issue are as follows-
Vojen Lozek: Cochlicopa nitens (Kokeil) in Czechoslovakia
W.J. Van Der Burg: Nassarius macharensis nova species, a gastropod from the upper Pliocene of the Netherlands.
S. Van Der Spoel: Groei en ouderdom bij Viviparus contectus (Miller 1813), en Viviparus viviparus (Linne',1758).

Description De Una Especie Nueva De Pomacea De Venezuela (Mesogastropoda,Architaenioglossa,Mollusca) by T. Pain and Sergio Arias C. - Novedades Cientificas,Contribuciones Occasionales Del Museo De Historia Natural La Salle-Caracas,Venezuela,Serie Zool. No.24,22 de Dec.,1958.
The new species is Pomacea falconensis n. sp.

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The annual Shell Fair of the Hawaiian Malacological Society must have been the best one to date. Congratulations are in order.
Dr. C.M. Burgess was awarded the Smithsonian certicicate-first such award given in Hawaii-for his exhibit of rare Hawaiian marine shells;John Duarte of Kauai won the shell-of-the-show prize with his fine Strombus hawaiiensis; Clifton Weaver, best exhibit,one genus. There were many others. We regret that we could not all of us have attended.

The Natural History Museum,Balboa Park,San Diego, Calif. have a program of Nature Walks and Excursions that might well be considered by other institutions. We note that on Saturday,February 7, one walk was ,Seashells of Bird Rock. Mr. Emery P. Chace,Curator of Conchology led the walk and identified the shells found by the group. Novices attending such trips will soon become advanced collectors under the guidance of Mr. Chace.

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MAY 1959

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

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Stanford University Press has included a supplemental errata list in a second bindery run of SEA SHELLS OF TROPICAL WEST AMERICA. Reprint copies of this list may be obtained by owners of first run books upon request from the author, Dr. Myra Keen, Department of Geology,Stanford University, California.
A self addressed stamped envelope should be sent with the request.

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The latest issue of Systematic Zoology contains a paper by Dr. Siemon Wm.Muller discussing a paper by Korobkov proposing a new morphologic entity, Forma accomodata. While the paper deals primarily with the Pectenidae, the same taxonomic problems apply to other families. The author states," The systematics of the family has become so complicated that it is commonly much easier to identify a specimen as to species than to assign it to the proper genus." ..." An adaptive form (Forma accomodata),according to Korobkov, is an artificial group of species within a genus which has no systematic significance. It unites the species having common adaptive characters, regardless of their geologic or genetic relationships. ... The adaptive forms should be written in parenthesis without punctuation after the generic names in the following manner: Chlamys (Forma accommodata Hinnites) cortesyi (Defrance)."

Olivella (Pachyoliva) columellaris (Sowerby,1825) Tankerville Catalogue, app.xxxiv . Duclos,1835, Mon.Oliva, pl.2,figs.11,12. - Reeve,1850,Conch.Icon. vol.6,Oliva,pl.23,fig.62- Marrat,1871,Thes.Conch.,vol.4,Oliva p.28,pl.21(348),figs.348,349- Dall,1910,Proc. U.S.N.M.,vol.37, no.1704,pp.166,210

Reeve,Conch.Icon.,vol.6,pl.23 describes as follows," Shell accuminately ovate,depressed,spire rather short,sharp,base broadly effused,truncated,columella thickly callous all along to the spire, obsoletely one-plaited at the base;bluish lead color,two zoned with yellowish white,interior of the aperture dark chestnut brown. H ab. Payta,Peru (in fine sand at low water); Cuming. Remarkably distinguished by a very copious deposit of enamel along the columella to the spire." End Reeve quote.

Tryon,Man.Conch.,vol.5, p.67 describes as follows," Acuminately ovate, the spire exserted,base broadly effused;columellar lip with heavy callous extending to the top of the body-whorl;commencing at the suture are a number of close,fine,longitudinal striae, which extend longitudinally to near the center of the body-whorl, where they become obsolete,and the rest of the whorl is polished; spire and fasciole white,body whorl almost covered by three broad chestnut or plum colored bands, the two dividing interspaces of yellowish white being quite narrow. Length,12-15 mill. Payta, Peru, in fine sand at low water(Cuming); W. Columbia;Panama. O. semistriata Gray(fig.71), O. attenuata Reeve (fig.72) and O. affinis Marrat (fig.73) are synonyms." End Tryon quote. *** The synonymy is not accepted.

Keen, Sea Shells of Tropical West America,1958, p.426,fig.643, defines as follows," Type of the subgenus, this is a heavily calloused species with a short,knoblike spire and a large body whorl. The spire and fasciole are white and the body whorl has three broad brown or bluish-gray spiral bands. About 14 mm.long. Nicaragua to Peru; common." End Keen quote.

Maxwell Smith, Panamic Marine Shells, p.35,fig.448, lists the range Central America to Sechura Bay,Peru.

The inclination to confuse this species with Olivella semistriata is common and easily understood. The ranges are stated to overlap and the distinctions discussed by the specialists must be carefully studied. We will take up O. semistriata following this species.

Axel A. Olsson,Studies on the Genus Olivella, Acad.Nat.Sci.Phil. 1956,pp.201-202,Pl.8,figs. 2,2a, discusses the species as follows: " A heavily calloused species with a short,knob-like spire and a large body-whorl.Immature specimens have a thin shell and a wide, shallow siphonal notch and a strongly twisted keel at the end of the columella;the parietal callus begins to form at an early stage at the upper end of aperture and rapidly spreads upward towards the suture which,however,remains open. Adult characteristics are well shown by the figure. The radula is quite small and often difficult to extract unless special care is exercised. An average ribbon will show about 34 rows of teeth and measure about 1.2 mm. in length,its width about .5 mm.,an individual rachidian tooth about .15 mm. Relatively high magnification may be required to show the minute accessory cusps between the primary ones.Primary cusps are numerous and variable in shape,sometimes becoming quite elongate and needle-like. .. This is the commonest Olivella in northern Peru, often appearing in large swarms along some sandy beaches during the periods of mid and low tide.The species was apparently gathered as sea food along with Donax and Tivela by the early Peruvian Indians and a large accumulation of their (con)

whitened, bleached shells mark the sites of Indian settlements and their " huecos" at many points in coastal Peru.Pimental,near Chiclayo is the most southerly point where we have observed the species but it may extend still further southwards.To the north, *columellaris* becomes replaced by *semistriata* but it has been *recorded from* Panama,Mazatlan and *the Gulf of* California,but these records have not been checked. Range- Coast of northwestern Peru; from Pimental to Mancora, and possibly northward to Panama and the Gulf of California." End Olsson quote.

Olsson described a new subgenus, *Pachyoliva* , with type *Olivella columellaris* (Sowerby).

Olsson's description of the subgenus follows," Shell small or of medium size,solid, with a low or elevated,pointed spire and a relatively large body-whorl.Color pattern predominantly banded. Pillar structure is formed by a single, keel-like plait at the end of the columella, above which the pillar wall is deeply excav--ated. Parietal wall smooth,typically covered by a thick layer of callus which may enlarge into a knob-like mass at the end of the aperture and continue across the penultimate whorl to the suture. Sutures distinct,deeply grooved or channelled.Operculum chitinous.

Radular ribbon small, with about 34 rows of teeth.Rachidian tooth, curved,crown-shaped, the basal margin nearly straight, the top convexly elevated in the middle, the sides narrowed, the cusps variable in number, often numerous(± 34),larger in the middle zone, smaller towards the ends,often with one to several subsidiary or needle-like denticles between them. Laterals blade- or spatula-like with rounded or minutely denticulate ends. Animal, see descrip--tion for *semistriata* . To *Pachyoliva* belong two of the commonest *Olivella in the Panamic-Pacific faunal* area, *O. columellaris* and *semistriata*, often appearing in countless *numbers along certain sandy beaches*. In both species, the inner lip is covered with a layer of callus which in *columellaris* may become excessively thickened by it." End *Olsson quote*.

Distribution- of *O. columellaris* - All sets in the Burch collection assigned to this *species are from* south of Panama, Puerto Elena,Ecuador; Payta,Peru etc. Other sets observed may be men--tioned in part. The collection of the Calif.Acad.Sci. contains a number of typical sets from Guayaquil,Ecuador;Payta,Peru;Santa Elena,Ecuador etc. In view of the range one set might be noted, No. 29916 is simply labelled ' Gulf of California'. Whether this locality is correct we failed to check, and they may indeed be large specimens of *semistriata* when studied again. One set though seemed to us to be *typical, it* is No. 914, Panama Hassler Exped. The collection of the Stanford University contains No. 8225 labelled Perlas Islands, Panama (Zetek), and #37492 from San Pedro,Ecuador. The Natural History Museum of San Diego contains numerous sets from south of Panama.

The literature abounds with references that may or may not be correct. For example, did H.N. Lowe have *O. columellaris* or *O. semistriata* when he published the *following note,in Nautilus*, *45:75-6 , from* Corinto,Nicaragua " and the sportive little banded *Olivella columellaris* (Sowerby) ,which,instead of the usual slow *gait of that genus, had* the jumping movements of a trained seal, usually burying itself in the sand between each wave,leaving only the two spreading tentacles protruding." ..." The beach was well supplied with colonies of *O. columellaris* (Sby.) in two color forms, a yellow one which *was quite rare.*" End Lowe quote.

Olivella (Pachyoliva) semistriata (Gray,1839) in Beechey, The zoology of Capt. Beechey's voyage,p.130,pl.36,fig.10.
Reeve,1850,Conch.Icon.,vol.6,Oliva, pl.23,fig.61- Marrat,1871, Thes.Conch.,vol.4,Oliva ,p.28,no.144,pl.21 (348),figs.350,351.
Olivina semisulcata Gray,1858, Proc.Zool.Soc.Lon.,p.55," Hab. West Columbia"; 1865, List of the Mollusca in the ...British Museum, pt.2,Olividae,p.30.
Olivella semistriata Gray,Tryon,1883,Man.Conch.,vol.5,pl.15,fig. 71(copy of Marrat's fig.351). Hidalgo,1898, Mem.R. Acad.Cien. Fis.Nat.Madrid,vol.19,p.539.
Oliva affinis Marrat,1871, Thes.Conch.,p.28,no.145,pl.21(348)fig. 352.
Oliva attenuata Reeve,1850,Conch.Icon.,vol.6,Oliva, pl.29,figs. 90a-b. Marrat,1870,Thes.Conch.,vol.4,Oliva ,p.28,pl.21,(348),fig. 353.
Oliva (Olivella) semistriata (Gray), Weinkauff,1878,Die Gattung Oliva ,Syst.Conchy.Cabinet,p.117,pl.31,figs.3,4.
C.B. Adams, 1852, Cat. Shells Coll. Panama,p.53,species 37
Zetek, Panama List, p.555- Carpenter, P.P.,Rept.1856,p.26b,340-; 1863,p.523,538,614. - Dall,1910, Proc. U.S. Natl. Mus.,vol.37, no.1704,pp.166,210.
Reeve,Conch.Icon.vol.6,pl.23,fig.61,described the species," The H alf-Striated Olive- Shell acuminately ovate,spire exserted,base broadly effused,truncated,posterior halfof last whorl concentricall deeply striated,striae close set,sometimes obsolete,columella arched,depressed,obsoletely one plaited at the base;grayish lead color,encircled with a narrow yellowish zone,spire callous,whitish, sutures chestnut brown,base and columella white,interior of the aperture chestnut brown. . Hab. Salango,West Columbia;Cuming. This species is well characterized by the upper or posterior portion of the last whorl being very closely concentrically grooved with striae, which in the preceding whorls become obliterrated by the flow of enamel from the aperture. The locality of O.semistriata is not given in Beechey's Voyage. The species was observed at Salango, by Mr. Cuming,moving about by hundreds with great rapidity in the wet sand." End Reeve quote.

Dall,W.H.- Proc. U.S.N.M. 37:166 stated, " This species is very similar to the last (O. columellaris) but has a proportionately longer spire, and is less compressed in front." End Dall quote.

C.B . Adams,1852,Cat.Shells of Panama states," We obtained a few specimens, which were occupied by hermit craba, on the reefs at Panama, near low water mark. In the fruit shanty we purchased 175 specimens, which appeared to have been taken alive." End Adams quote.

Keen,A.Myra, Sea Shells of Tropical West America,1958, p.426, fig.644,describes as follows," Olivella (Pachyoliva) semistriata (Gray,1839) (Synonyms: Oliva attenuata Reeve,1850;Olivina semisulcata Gray,1858; Oliva affinis Marrat in Sowerby,1871).This has a higher and more slender spire than O.columellaris , and a faint series of vertical striae at the upper margin of the body whorl which is distinctive. Length, 15 mm.; diameter, 7 mm. The Gulf of California to northern Peru; common." End Keen quote.

Axel A. Olsson, Proc. Acad. Nat. Sci.Phil.,vol.108,1956,pp.202-203, Pl.8,figs.4,4a; pl.15,figs.5,5a,5b discusses as follows, " This is a more northerly species than columellaris, with a higher,more slender and more sharply pointed spire,and less heavily calloused. Dall has recorded the species from Sechura Bay. O. zonalis Duclos is a small,thin-textured shell with a thin(con.)

callus over the inner lip and a large keel or fold at the tip of the columella. This shell is imperfectly known to us from a small lot collected at Mazatlan. (ANSP no.28939). These shells resemble Duclos figure (Duclos, pl.1,figs.3,4) and possibly should be regarded as immature semistriata. Animal (see Plate 15, figs. 5, 5a,5b);lateral margins of the propodium with large,tentacle-like appendages; color generally blackish, the edges of the foot margined with white. Radula like columellaris , an average specimen with 31 rows of teeth,measures length .9 mm. width .4mm. A small form of semistriata,perhaps deserving subspecific separation, is common at Esmeraldas. Range- Gulf of California southward to northern Peru. Mexico-Mazatlan (as zonalis by Carpenter). Panama: Guanico. El Largartillo near Las Tablas etc. Columbia: Isla del Gallo. Ecuador: Santa Elena. Manta. Charapota,Sua, Esmeraldas. Peru: Zorritos." End Olsson quote.

Hertlein, Lep George and A.M. Strong, Marine Mollusks Collected During the " Askoy" Expedition to Panama,Colombia, and Ecuador, 1955, Bull.Am.Mus. Nat.Hist.,Vol.107,Art.2,p.237,Pl.3, fig.22, discuss the species," Type Locality: No locality cited originally. Salango,Ecuador (cited by Reeve), here designated as type locality. Range: San Jose Island, Gulf of California to Sechura Bay, Peru. Material Examined: Forty eight specimens from Ardita Bay, Colombia,March 5,1941,Station 31,sample 80,on beach. Measurements: One of the largest specimens: length, 11.1 mm.;maximum diameter 5 mm. A specimen in the collections of the California Academy of Sciences from Piedra Blanca Bay, Costa Rica, measures: length,20 mm.; maximum diameter, 8.1 mm. Habitat: On wet sand in front of advancing tide. Description: Shell elongate,posteriorly acuminated,on adult specimens the posterior half of the last whorl is often closely,finely,longitudinally sulcated; columella arched, one oblique fold at the base;columellar callus extending up on the penultimate whorl;body whorl grayish lead color often with a narrow,yellowish band below the suture and another on the middle of the whorl,spire gray,sutures brown,base and columella white, interior deep chestnut-brown. Remarks: The shells here identified as Olivella semistriata Gray are certainly identical with those illustrated under that name by Reeve and Marrat. Although Gray's original description stated," last whorl closely concentrically striated on the hinder half," an inspection of his figure 10 reveals but the faintest traces of either concentric or radial striae. Reeve and Tryon repeated Gray's remark concerning concentric striae, but Marrat stated what is certainly true of the specimen illustrated by Reeve as well as the present specimens, " having the upper half of the last whorl strongly and closely sulcated," Unless authors subsequent to Gray have misidentified Gray's species, it appears that his remarks about concentric striae are a mistake for longitudinal striae or sulcations. The shell of this species differs from that of Olivella columellaris Sowerby in the higher spire, less strongly developed columellar callus, and in the presence of fine axial sulcations on the posterior half of the last whorl. The form described as Oliva affinis Marrat [1871, in Sowerby(1870-1871),vol.4,p.28, pl.348 (Oliva pl.21) fig.352] is very similar to and probably identical with O.semistriata. The original illustration shows only a trace of the axial sulcations such as are present on Gray's species." End Hertlein and Strong quote.

Distribution: Large set in the Burch collection labelled Sandy Beach,Canal Side of Culebra Island, just off Amador Causeway. Set labelled La Paz, Gulf of Calif. ex. Hugh Fulton.(con.)

The Natural History Museum of San Diego contains some large sets of this species. One set is No.34144 from San Juan del Sur,Nicaragua, H.N. Lowe,1931. This set had been assigned to O.columellaris but the higher spire , the faint vertical striae, and less callus clearly places it here. A set studied in the collection of the Stanford University is No. 46494, from near Remedios,Panama, James Zetek coll. A number of fine sets are to be seen in the collection of the California Academy of Sciences. No. 17977A from Uvita Bay,Costa Rica, Crocker-Beebe Exped.-.

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Inasmuch as the following species has been placed in the synonymy of O. semistriata (Gray) it may be of interest to include Reeve's original description of, O.attenuata . Conch.Icon.,Pl.29,fig.60. " O.attenuata (Reeve,1850)- as Oliva- " " The Attenuated Olive-Shell ovate, rather broad toward the base,peculiarly acuminated towards the apex,columella slightly arched,scarcely plaited,callous at the upper part;transparent-horny,broadly banded with brown-red. Hab.--? This species might readily be confounded with the following (O. zonalis) from the similarity of its texture and painting,but from a comparison of numerous specimens of each I feel assured of their being distinct. The O. attenuata is uniformly more attenuated towards the apex and less deeply excavated, and the brown red bands broader and lower on the shell." End Reeve quote.

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Olivella (Olivella) fletcherae Berry ,1958 Leaflets in Malacology Vol. 1,No. 15,March 28,1958. Published by the author.
First figured in Keen,Sea Shells of Tropical West America,p.424-425, fig.634a. The description follows," Diagnosis: Shell small,lustrous, narrow,widest a little below the middle;spire elevated, apex acute, whorls about 6 1/2;suture very narrowly chanelled and overhung by the sharp edge of the whorl below. Aperture about half as high as the shell,narrow, triangular,terminating below in the very short squarish canal; outer lip thin;parietal callus moderate,thickest near the end of the suture but thinning out before quite attaining the suture above;columella moderately concave within, its lower portion armed with a narrow raised plate bearing 5 or 6 low entering folds. Fasciole smooth,wide.Color whitish,maculated with light and dark brown,which often forms a more or less continuous band below the suture. Alt.of holotype 9.6 max. diam. 3.5 alt.,aperture 5.3 mm. Holotype: To be deposited in the type collection of the Department of Paleontology,Stanford University. Type-Locality: Cholla Cove,Bahia de Adair,Sonora,Mexico: S.S. Berry,Mar.1958 and subsequent dates. Commentary: This is an abundant and rather familiar little species but has been confused by collectors , and some students who should have known better, with the immensely larger O. gracilis (Brod. & Sby.) and the altogether different O. anazora (Duclos). It is well characterized by its small size,slender form, and the details of the pillar structure. It is named for the well known collector,Mrs. Howard L. Fletcher,whose first love among mollusks was the Olividae." End Berry quote.

Keen,Sea Shells of Tropical West America (ref. above) describes as follows," Frequently misidentified in collections as O. anazora or O. gracilis , this slender,shiny little shell is marked with bright yellowish-brown on a whitish or creamy ground. Length, about 10 mm.; diameter, 3.5 mm. Apparently restricted to the northern part of the Gulf of California, from La Paz to southern Sonora, Mexico; not uncommon. locally." End Keen quote.

Our observation has been that this form has generally been assigned to O. gracilis in the large collections. Careful study (con)

should be given to these two to determine the exact relationship. At this time many sets of O. fletcherae may be seen in large collections labelled O. gracilis , including some that seem to contain both. No doubt some of the records to be listed under the following species, O. gracilis are of this form.

Distribution- We have noted specimens collected by Dr. D. Shasky from Puertacita,Baja Calif., Mar. 2 & 3,1958; specimens from the same locality taken by Mrs. Dorothy Brown. Sets of shells in the collection of the California Academy of Sciences that seem to be of this form but at present labelled O. gracilis may be No.23805, Puerto Escondido,Gulf of Calif.; No. 23795, San Evarista Bay, Lower Calif.; No/ 24074, Punta Arena,Ceralbo Island,Gulf of Calif, and a large set in the Gifford collection from Ensenada Blanca.

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Olivella (Olivella) gracilis (Broderip and Sowerby,1829) Zool. Jour.,vol.4,p.379

Duclos,1835,Mon.Oliva, pl.1,figs.17,18 - Reeve,1850,Conch.Icon., vol.6,Oliva, pl.20,fig.46- Marrat,1871,Thes.Conch.,vol.4,Oliva , p.30,no.156,pl.22(349),figs.370-372- Weinkauff,1878,Die Gattung Oliva, Syst.Cabinet,p.133,pl.35,figs.2,3- Carpenter,P.P., Rept. 1863,p.538,542,625- Tryon,Man.Conch.,vol.5,p.70- Zetek's Panama List, p.526- Proc. USNM,vol.17,p.175-vol.16,p.387-Proc.Calif.Acad. Sci. 4,19,p.12 & p.20-Proc. Acad.Nat.Sci.Phil,vol.84,p.112- Trans.San Diego Soc. Nat. Hist,vol.8,p.30.

Reeve,Conch.Icon.,pl.20,fig.46,describes as follows," Shellslenderlu fusiform,truncated at the base,Terebellum-shaped,spire elongately exserted ,last whorl short,descending towards the aperture, columella curved,callous at the upper part,plaits somewhat twisted; white,sparingly and irregularly reticulated with red brown,encircled with a fawn brown zone round the base,spire callous, but little painted,columella and interior of the aperture white. Hab.-Xipixapi, West Columbia (in sandy mud at a depth of about nine fathoms); Cuming. ..Remarkable for the descending convolution of the last whorl which gives a prolonged appearance to the spire,whilst the shell, being light and broadly truncated at the base, partakes of the form of Terebellum. The net-work coloring is extremely partial in its distribution." End Reeve quote.

Tryon,Man.Conch.,vol.5,p.70,Pl.16,fig.26;pl.17,fig.27," Shell rather slender, with elevated spire, and somewhat effuse below; yellowish fawn, with light chestnut zigzag markings and maculations. Length,.7 -.9 inch. Mazatlan;Lower California. ..Distinguished from O. anazora , which inhabits the same region, by its more slender form,elevated spire,greater size and lighter color. O. tenuis Marrat (fig.27), is probably a juvenile of this species." End Tryon quote.

Grant and Gale, Mem.San Diego Soc. Nat Hist vol.1,p.627-628, comment," This is an elongate species, the whorls steeply descending so that even the penultimate whorl is quite long". The authors refer to the fossil record as ,Pliocene: Coyote Mountain,Imperial County,Calif. (Hanna), and Pleistocene,: Coast of Oaxaca,Mexico.

Axel A. Olsson,Proc. Acad. Nat.Sci.Phil.,vol.108,1956,p.177, Pl.11, figs.5,5a, states," Similar to Olivella nivea but smaller, more slender and more richly colored. Described originally from the coast of Ecuador, the species ranges southward to Paita,Peru where it is rare, and possibly northward to the Gulf of California. The radula has been figured by Thiele in the second volume of Troschel's Das Gebiss der Schnecken,pl.10,fig.13. Recorded as fossil from the Pliocene of Ecuador and also from the Pliocene and Pleistocene of Mexico and Lower California." End Olsson quote.

Keen,Sea Shells of Tropical West America,p.424,fig.635,1958, " ..A slender white shell with brown zigzag markings in two (con.)

bands,some specimens also with a brown basal area. Length 20 mm.; diameter, 7 mm. Small specimens may be confused with O. anazora which, however, has a single large columellar fold instead of several that are cut off at the inner end. Guaymas,Mexico to Panama, and perhaps to Peru; not common." End Keen quote.

Maxwell Smith, Panamic Marine Shells,1944,p.35,fig.434, lists the range ,Gulf of California, Mazatlan.

H.N. Lowe, Nautilus 47:47,1933 reported the species from San Felipe,Lower Calif. B.R. Bales,Nautilus, 52:35 listed the species from Acapulco.

Distribution: Some of the sets observed follow. In the Calif. Acad. Sci.Coll.- No. 23802,San Luis Gonzango,Gulf of Calif. A.M. Strong (This is O. fletcherae); No.23809 San Jose Island, 10 fms. to shore (also is O. fletcherae) ;No.23808 Sam Ignacio ,Conception Bay (is O. fletcherae) ; No.24062,San Lucas Bay,Lower Calif. (typical adult O. gracilis); also typical large O. gracilis are No.27586 and 27587, off Cape San Lucas, T. Crocker Exped.,1932;No.24108 from Maria Magdalena Island,Mexico,Tres Marias, G.D. Hanna and E.K. Jordan (typical O. gracilis); sct No. 17858 Tangola-Tangola Bay,Mexico,5 fms.,Crocker Beebe Exped. (This set is one that causes one to wonder because they seem to contain O. fletcherae , too large) No.27584, Dredgings off West Mexico, Lat. 23 03 to 23 06N Long. 109 36 to 109 31 in 20 to 220 fms. (This set seems to contain O. Fletcherae as well as typical O. gracilis); No. 23777 Clarion Island,Revillegigedo Group,Mex. (Seem to be O. gracilis but more obese than typical); No. 27224 Tangola,Tangola,Oaxaca,Mex. (Typical O. gracilis); N o. 17946 Piedra Blanca Bay, Costa Rica (Another set containing some very slender specimens that are puzzling); Sets in the Stanford University collection, several lots from La Paz, another set from Mazatland No.2339. The Natural History Museum of San Diego contain many sets among which are: Mazatlan, H.N. Lowe,1930;Tres Marias Islands, A.M. Strong; San Felipe (Strong); sets coll. of H.N. Lowe from,Cape San Lucas,Conception Bay,Corinto, Nicaragua,Acapulco,Mex. etc.

Olivella versicolor (Marrat in Sowerby,1871). This species has been placed in the synonymy of O. gracilis by Keen and others. Tryon placed it in the synonymy of O. anazora. Maxwell Smith, Panamic Marine Shells,p.35, species no. 437,1944, lists it as a distincct species, " 17 mm. Pesquiera Bay,Baja Calif. to Xipixapi, Ecuador." However, this species is certainly questionable. Weinkauff adds the note " Species dubiosa".

The reason for mentioning the name here is that the name has been in use by some workers. We noted one set so labelled that seemed to be very obviously the O. fletcherae form and labelled Gulf of Calif.

var. gaylordi Ford 1894

Olivella gracilis var gaylordi Ford,1894 Nautilus,Vol.8,p.104, Pl.II,fig.14.

It is difficult to determine exactly what this shell may be from the description and figure which fail to describe the characters of the columella. However, Vanatta in Nautilus ,vol.29, p.72 states that the types are in the Acad. Nat. Sci.Phil.,labelled Gulf of California, No. 111804. We have not seen the type nor have we seen specimens referred to gaylordi. The locality seems to be somewhat uncertain as well. For the record here we will quote Ford's paper. " A New Variety of Olivella. Some months ago, I received from my friend, Mrs. E.M. Gaylord , of Alameda,Calif., a

(con.)

suite of Olivella which had been found by her in a box of shells that apparently came direct from the Gulf of California. All of the associated species were well known Gulf shells,and as the Olivella were in the same fresh condition as the rest, there was no reason to doubt that the entire lot had been secured simultaneously, and, probably, at the same locality. In view of this conclusion,also of the fact that the specimens are in some respects distinct from any heretofore known to me, or, so far as I can learn to any writer on conchological matters, I assume the responsibility of naming and describing them as follows:
Olivella gracilis Gray, Var. Gaylordi Ford. Shell similar in outline to O. gracilis , but much smaller,general color bluish gray, with a well defined interrupted band of a lead-black hue bordering the upper part of the final or body whorl. Smaller spots of a like hue also appear at the upper edge of the fasciole. Circling the middle portion of the whorl is a number of irregular brownish lines, which also occur less prominently on the fasciole. In some specimens a splotch or two of the same color as the interrupted band referred to ,appears on the upper part of the preceding whorl. Apex very acute and free from spots. Length of aperture rather more than one half that of the shell;dorsal portion of the extreme base creamy white. Average length of specimens 9 to 10 mm., width 3.2 to 4 mm. Hab.,Gulf of California." End Ford quote.

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It is far easier to identify a specimen to species in many families than it is to solve the maze of taxonomic confusion surrounding the assignment to a proper genus.

Our refusal to accept some generic changes does not infer a lack of appreciation for the scholarly work done by some authors on the species involved.

It would seem to be possible to accept radular studies without disrupting every check list from Linnaeus to date.

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Olivella undatella (Lamarck,1810) Ann. du Mus. xvi,p,326,no.55.
The diagnosis of this species in Keen,A. Myra-Sea Shells of Tropical West America, 1958, p.422,fig.627 follows:
" Subgenus Strephonella Dall,1909. Small, low spired shells with an incised line around the middle forming a wide band between it and t the fasciole below that differs in coloration and texture."
" 627. Oliva (Strephonella) undatella Lamarck,1810 (Synonyms: O.tenebrosa Wood,1828; O. nedulina Duclos,1835) White to yellowish in ground color, this form has varied markings of brown. The columellar callus is thick but not wide,with folds along its entire extent. Length, 12 mm.: diameter, 6 mm. The size suggests affinity to Olivella , but the radula is that of Oliva, according to Dr. A.A. Olsson (in litt.). Magdalena Bay, Lower California,through the Gulf and south to Ecuador,intertidally; not uncommon. The species is type of the subgenus Strephonella." End Keen quote.

Olivella undatella (Lamarck,1810) Ann. Mus.Hist.Nat.Paris,vol.16, p.326- Duclos,1835,Histoire Naturelle..de coquilles,genre Olive,pl.5 figs.5,6, vars. 7-10- Reeve,1850,Conchologia iconica, vol.6,Oliva, sp.73,pl.25,figs.73a-73e- Marrat,1871, in Sowerby,Thesarus conchyliorum, vol.4,p.21,pl.343 (Oliva pl.16), figs.258-262 as var " nidulina"). Oliva nedulina Duclos,1835,Histoire naturelle...de coquilles, genre Olive, pl.5,figs.13,14, no locality cited- 1844, in Chenu, Illustrations conchyliologiques,Oliva, p.12,pl.6,figs. 13,14- Tryon,1883, Manual of Conchology, vol.5,pl.33,fig.31(copy of Duclos' fig. 14)- Anazola undatella Lamarck, Gray,1858,Proc. Zool. Soc. London,p.51-1865, List of the Mollusca in the .. (con.)

British Museum, pt.2,Olividae,p.23-Adams,C.B.,Cat. Shells..Panama, 1852, p.55,fig.39- Carpenter,P.P.,Mazatlan Catalogue,no.595- Carpenter,Rept. 1856, p.171,262,350-Rept. 1863,p.625-M. Smith, 1944,Panamic marine shells,p.35,fig.455- D.S. and E.W. Gifford, 1947,Nautilus,vol.60,pp.81-84- H.R. Hill,1954,Nautilus,vol.68,p.69. Proc. U.S? Nat.Mus.vol.17,p.175- Proc.Calif.Acad.Sci.4,19,p.20- Proc.Acad.Nat.Sci.Phil.vol.84,p.113.

Reeve,1850,Conch.Icon.,pl.25,fig.73a-e,describes as follows,The Waved Olive.-Shell cylindrically ovate,spire rather short acuminated columella four plaited at the base, plaits flattened, many-plaited above,plaits rounded and rather distinct;whitish,variously waved and clouded with blue gray and brown, with promiscous whitish triangular spaces,basal zone yellowish,streaked with brown lines,cokumella whitish, basal plaits most frequently stained with deep purple. ..Hab.Bay of Panama(in sand on mud banks at low water);Cuming. It has been necessary to figure several examples of this species to show its variety of colouring,the pattern of which is sometimes disposed in promiscous waves and sometimes in broad triangular dashes." End Reeve quote.

Tryon,Man.Conch.,vol.5,p.70,pl.16,fig.18;pl.17,figs.35038;pl.33, fig.31, describes as follows," Ash gray with zigzag chestnut markings,distinct or obsolete,but forming two well marked revolving bands by the color becoming emphasized; a yellowish band marked with chestnut beneath the sutures;fasciole yellowish;strigated with chestnut,interior and base of columella chocolate colored. Length, .5 -.8 inches. Panama to Mazatlan. The above description is that of the typical coloration,but the variation in color and markings is so great that it is wonderful that a number of species have not been separated from it. One of the principal variations is a pure white,with indefinite cloudings,maculations or zigzags of chocolate;another white,with pink longitudinal zigzag markings,etc. Fig.31 represents O. nedulina Duclos." End Tryon quote.

Leo George Hertlein and A.M. Strong, Marine Mollusks Collected During the " Askoy" Expedition to Panama,Colombia, and Ecuador in 1941, Bull.Am.Mus.Nat.Hist.,vol.107,art.2,1955, pp.237-238, discuss the species as follows," Type Locality: " Habite l'Ocean pacifique, sur les cotes d'Acapulco, d'ou8 M.Bonplan l'a rapportee" [Mexico]. Range: Magdalena Bay, Baja California to San Felipe in the Gulf of California and south to Punta Santa Elena,Ecuador. ...Habitat: Sandy mud bottom. Description:Shell subcylindrically ovate,spire rather short and sharp,columella with several well-spaced ,sometimes divaricate plaits on the base;color variable, ash-gray with blue gray or brown or zigzag lines or with triangular markings or with broad bluish gray or blackish blue band or sometimes almost entirely white,base usually with a yellow band streaked with brown and often a similar narrow band with brownish red dots or streaks just anterior to the suture;columella often white, sometimes stained with purple or brown. Remarks: The shell of this species is characterized by its rather short ,subcylindrical shape, low spire, and strong, well-spaced columellar plaits. The color is variable,but usually the body whorl of the darker colored forms is ornamented with zigzag longitudinal lines or triangular markings and with two yellowish bands streaked with brown, one at the base and a narrower one just below the suture. The present specimen is white....The form named Oliva nedulina Duclos appears to be identical with this species. In view of the great variation in color shown in a series of specimens, the naming of shells of this species based only on variation in color would hardly seem useful. Olivella dimidiata Pilsbry & Johnson,described from the Miocene of Santo(con.)

Domingo, was compared by its authors with *O. undatella*." End Hertlein and Strong quote.

D.S. and E.W. Gifford,1947,Nautilus,vol.60,pp.81-84, Color Variation in *Olivella undatella* , This is an interesting paper on this species. The authors had collected 2,641 specimens on the sandy shores of Santiago Bay near the city of Manzanillo,Colima,Mexico. They divided the color forms into 12 groups,but stated the case perfectly when they stated that after segregating the pure immaculate albinos numbering 524 (or 20% of the population), the remaining 2,117 shells ranging from light to dark showed no two colored shells to be identical. They noted that the majority of the colored specimens, not all,had a yellowish fasciole with chestnut stripes. Exceptions were the albinos. Even the very dark shells have the yellowish fasciole, which is evidently one of the striking characteristics of the species, but not a universal one. Variation in the shape of the shells is not obtrusive. Scanning the series for obese and slender examples, they selected two extremes. These yielded length-bredth indices of 51 for the obese and 47 for the slender shell.

Specimens observed by the Burches- The large series mentioned above are in the Gifford collection in the California Academy of Sciences. Brief notes on these may be noted. All are from the collecting at Santiago Bay. A very large set of perfect albinos; a large set pure white with a few brown markings just below the suture and above the fasciole; a large series of shells pearl gray to plumbeus (Ridgway color standards); large series of yellowish brown; a set of xanthochristic with maculations; set of flesh colored specimens; and a huge lot of specimens of the more typical markings.

Other sets noted in the main collection of the Calif. Academy are, No.946,Magdalena Bay;24108 Maria Magdalena Island,Tres Marias Group; No. 17910 from Corinto,Nicaragua in 7-10 fathoms, Crocker-Beebe Exped; other sets from the Gulf of California but all typical.

Sets noted in the collection of Stanford University are No.1423 from Guaymas,Sonora,Mexico; No. 41370 from La Paz.

Some of the specimens noted in the collection of the Natural History Museum of San Diego are- San Blas,Mexico, H.N. Lowe,1935 (dark, banded); set from San Felipe,Baja Calif.,Mexico,Lowe, 1932(No.25918, more slender than San Blas shells, but otherwise identical); Mazatlan,Sinaloa,Mexico (dark form,typical); Manzanillo, Mexico,Jan.1929, H.N. Lowe (this set contains the very dark to albino with all intergrades of color); Puntarenas,Costa Rica,Lowe, 1931 (all of the very dark color); Montijo Bay, Rep.Panama, Lowe, 1931; Corinto,Nicaragua, Lowe,1931 (dark form).

The Burch collection contains many sets of the species. One large series is labelled Puntarenas, ex. Dr. Fred Baker (This set contains the variations including some albino); Magdalena Bay, Lower Calif.; Vedado,Panama etc.

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Olivella inconspicua (C.B. Adams,1852) Catalogue of Shells collected at Panama, Lyceum of Nat. Hist.,New York, p.50, no.34

The original description of Adams follows. No figure was given. " Oliva inconspicua Nov. sp. Shell rather slender;white;smooth; spire about as long as the aperture;apex rather obtuse;whorls six, with a well impressed suture,slightly convex;aperture acuminate in the upper half,subrectangular in the lower half;labrum thin; anterior notch very slight, wide. .. Mean divergence about 30°; in another specimen nearly 40°; length .15 inch; breadth .055 inch. Station-Unknown Habitat- Panama; C.B.A. We obtained only 3 mature specimens and one immature, in picking over several quarts of fine drift materials gathered on shore near the city wall...A kindred undescribed species occurs in Jamaica. Like the above and like most of the minute rare tropical species,it appears to have escaped the notice of collectors." End Adams quote.

Ruth D. Turner, The Eastern Pacific Marine Mollusks Described by C.B. Adams, Dept. of Molls.,Mus. Comp. Zool.,Harvard Univ., Occ.Paps. om Mollusks,vol.2,no.20,1956,p.55,pl.6,fig.4 - This paper supplies an excellent photographic figure.

Axel A. Olsson, Proc.Acad.Nat.Sci.Phil.,vol.107,p.211,pl.10,fig.5; pl.16,fig.8, discusses the species as follows," Shell very small (the average about 3.5 mm. in length), white,with an elevated, turrited spire of five or six whorls, the apex tipped by a small, blunt nucleus. Sutures deeply channelled,the margin of the whorl in frontthin,sharp and sometimes frayed,widely overhanging.Parietal callus thin,but not extending above the end of aperture.Pillar structure is a small,plain fold at the end of the columella,border--ed externally by a low groove. Fasciolar band small, narrow, not extending higher than the lower one-third of the aperture. Length, .15 in.(3.80 mm.), diameter .055 in.(1.4 mm.)

The original material from which this species was named by C.B. Adams consists of 2 mature and 1 immature specimens obtained after picking over several quarts of fine drift gathered on the shore near the city wall of Panama.A figure of the type specimen from the original lot is given on Plate 16. O. inconspicua appears to be a rare species at Panama but a few specimens can generally be ontain--ed in the careful picking of shell drift. Although somewhat simil--ar to O. perplexa from Florida in general shape and great variab--ility, inconspicua is generally smaller, its nucleus higher and less deeply immersed,the tip of the spire therefore appearing more pointed. Range-Panama. Panama: Vicinity of Panama City. Puerto Armuelles." End Olsson quote.

Olsson placed the species in subgenus Minioliva Olsson,1956.

Keen,Sea Shells of Tropical West Am.,1958,p.426,fig.641 states, " Olivella (Minioliva) inconspicua (C.B. Adams,1852) (Synonym: " Oliva myriadina Duclos" of authors). A minute white shell with a turreted spire. Length, about 3.5 mm. Panama; not common." End Keen quote.

Having stated the descriptions of Olivella inconspicua as given above, and having studied the figures of the type as figured by Turner and Olsson, it becomes apparent that this species has been misunderstood and generally misidentified. Both the great collec--tions and the literature of the shells of this coast abound with references and collections that are certainly not the turrited shell described above. It is our opinion that we are dealing with two distinct species and that almost all records are not to the O. inconspicua of Adams but possibly to O. myriadina of Duclos. This species will be considered next.

Olivella myriadina (Duclos,1835) Monog. ..du genre Oliva ,pl.5, figs.1,2.

Tryon, Man.Conch.,vol.5,p.68,pl.15,fig.90. Tryon's figure is a reproduction of Duclos' fig.2, and his discussion follows," Spire prominent,showing six whorls; pure white. Length, 3-4 mill... This is the smallest of the Olivellas, yet the number of whorls and form of the shell indicate maturity. Duclos gives no locality, but I venture to identify with his species the unfigured O.inconspicua C.B. Adams, from Panama; a species which has been misunderstood by Marrat and Kuster-- as has also myriadina." End Tryon quote.

Reeve, Conch. Icon.,pl.30,sp.94, describes as follows, " The Myriad Olive. Shell somewhat fusiformly oblong,spire exserted, columella short,arched,obscurely one plaited at the base; ivory white,shining,semipellucid. Hab.--? There is no indication of colour or marking in this species,which is of a pure pellucid--white." End Reeve quote.

Maxwell Smith, Panamic Marine Shells, 1944, p.35, fig/ 436. Smith figures a shell of the same form as those figured by Tryon and Reeve. As stated above these are far different from the figures of the type of O. inconspicua fide Turner.

It is suggested here that almost all records from this coast are to a species of the above form. For example, P.P. Carpenter, in Catalogue of Mazatlan Shells,1857, p.470,no.599, describes as follows," Olivella inconspicua ,C.B. Ad. ...Comp.O. oryza Lam. This species was described by Prof. Adams from dead,immature specim--ens, apparently for geographical reasons. On comparing the only fresh adult with O. oryza and its cogeners from the W. Indies,the differences appear extremely slight. The spire is rather narrower in the upper whorls,pure white; parietal callosity rather smaller; lower columellar plaits rather more projecting,especially in the young shell. Spire with 7 whirls, and a faint line of opaque white just below the suture. Long. 25,long.spir,'1, lat. 09,div.45°. Hab.- Panama; 4 sp. among drift; C.B. Adams-Mazatlan;traces of 20 sp. off Chama and Spondylus; L'pool. Col. Tablet 2187 contains 2 perfect specimens, young and old." End Carpenter quote.
Other Carpenter references- Rept. ,1856,p.262- 625; Rept. 1863, p.538,548,625.
Mem.1,San Diego Soc. Nat. Hist., Grant and Gale,p.628.
E.K. Jordan, Bull. So. Calif. Acad.Sci.,vol.23,p.151,1924. Jordan reported (O. inconspicua) Recent: Gulf of California,Mexico to Panama, and Pleistocene: Upper Quaternary at San Ignacio Lagoon, Lower California, Mexico.

The conflicting opinions of authors regarding the identity of O. myriadina is interesting. Tryon placed O. myriadina of Marrat in the synonymy of O. nivea (Gmelin) , and Carpenter's comparison with O. oryza Lam. indicates that he must have had something other than Adams' inconspicua. A few others that seem puzzling are the brief comments in Thes.Conch. as " 208. myriadina (f.440) The length of the spire is very variable.", and this is another question," 205.inconspicua " My shell agrees with the specimens deposited by the describer in the British Museum. Its short spire and ovate form serve to distinguish the species." End Marrat quote. Obviously the type of inconspicua as figured by Turner and by Olsson has neither a short spire nor is it obese. Weinkauf recog--nized O. inconspicua C.B. Adams ,as a valid species, but placed O. diadocus Marrat,(438) in the synonymy with all indications that he had a form of O. nivea. (con.)

Regardless of whether or not the specimens are true Olivella myriadina (Duclos) the fact remains that the name is in general use. There are sets of specimens in all large collections, many labelled O. myriadina, others O. inconspicua, with none of them resembling Adams' type. Some of these follow.
Burch collection- several large series from the Gulf of California. One very large set of hundreds of individuals labelled La Paz, Baja Calif. ex. Dr. Fred Baker.
The collection of the California Academy of Sciences contains many large sets. One from San Jose Island,Gulf of Calif. (labelled O. myriadina) ; set no.23801,23810,23801,27242..Ithmus Bay,Expiritu Santo Island,Gulf of California (labelled O. myriadina); set no. 23798, Carmen Island, Salt Works, Gulf of Calif.; 223799 San Francisquito Bay, Lower Calif., F. baker,1921(var. globosa) ?; no.23801 San Gabriel Bay,Espiritu Santo Island,Gulf of California (labelled var. globosa- 4 1/2 whorls, 8 1/2 x 4 mm. ?).
The Natural History Museum of San Diego contains numerous sets. Among these may be mentioned, set from Espiritu Santo Island, ex. A.M. Strong; Conception Bay, ex. J.L. Baily Jr.
Stanford University collection contains sets among which are no.42704 from La Paz,Baja Calif.,Mexico (labelled O. inconspicua).

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Dr. Axel A. Olsson,Proc. ANSP,v.107,p.217, discusses Olivella miriadina (Duclos) under his section on genus Cupioliva Iredale 1924. It seems that all collections noted from this coast spell the name myriadina following Tryon et al no doubt. It also seems that Olsson's concept of the species is not the shell discussed above. We are not questioning Olsson's diagnosis, but merely assembling some of the references for further study . Olsson's comment is " Duclos' figures are those of a small shell(small scale figure indicates a length of about 4.5 mm.). It has an elevated,sharply pointed spire,the sutures appear merely grooved without an overlapping colar. The parietal callus is not shown clearly but may have been thin and covering the parietal wall only.The pillar wall is concave, the end of the columella provided with a simple fold. The shape of the shell is suggestive of O. blanesi but only half its size. A similar figure is given by Marrat and Weinkauff.D'Orbigny in a brief note on the species remarks as follows: " Es la mas prolongata de las especies que acabamos de describir, y se distingue ademas por la falta de dientes o plieques en la columella, su cabeza es de color blanco uniforme. Habite en todos las Antilles." (Molluscos de Cuba,p.215). This species may prove to belong to Minioliva but until larger collections of minute Olivellas of the West Indian and Caribbean area are available, the identification of this species is uncertain." End Olsson quote.
Conclusion- A very nice question is presented. If the shells from West Mexico are neither O. inconspicua nor O. miriadina this species must have another name. What is it ? " Status uncertain" may well be repeated here.

Reeve,Conch.Icon.,pl.30,fig.94 figures and describes as O.myriadina. Hab.-?
Weinkauff, 39,9,10- Weinkauff stated locality " Antillien, Sudcarolina"- stated in syn. var.= O. miliacea Marrat ,441

Live South Pacific Marine Organisms Taken From Ship Bottom In Drydock In Seattle,Washington

By Walter J. Eyerdam

As a shipyard worker I have often had the opportunity to examine ship's bottoms while in drydock for marine growths. In nearly all cases only a few species of the usual local growths of green algae and the common barnacles , Balanus and Glandula , and the blue mussel Mytilus edulis, with a few hardy hydroids,especially Obelia,Plumularia etc. could be found. Of course, these infestations are often heavy, depending upon how long the ship lay in local waters. Except a very few ships that have lain in southern waters and accumulated a few pink bell barnacles, Balanus tintinnabulum , I have seen no other kinds of marine growths except the following remarkable case here in Puget Sound.

In April,1952, at the Puget Sound Bridge and Dredging Yard on Harbor Island near the mouth of the Dawamish river in Seattle, we had a ship infested with live tropical South Pacific organisms. It was an army transport that had apparently gathered these animals while lying for a considerable time in shallow water in a quiet anchorage.

Except for a few infestations on the rudder the rest of the biota was nearly all confined to an area about one square yard in and around the square inset seacock door on the port side. All of the bivalves were held with their byssus threads. Pinctada species are often hitchhikers on ship bottoms or logs in tropical waters and with barnacles it is a usual habit for several species, but most surprising was to find three species of Pinna , and an immature Cypraea tigris. Quite likely other cowries and snails had started on the long Pacific voyage, but were unable to live or hold on. It is still a mystery to me how these animals could survive in the changing from warm tropical seas to the icy waters of Puget Sound in the early spring. Besides a lack of their proper food supply this also proves that some warn water animals are quite hardy and are tolerant of adverse conditions in regard to food supply and a lower temperature,

This transportation shows some evidence of certain species being carried thousands of miles from their natural home and being left to propagate themselves on far distant shores at least in favorable waters.

The following animals were observed and collected.

Pelecypoda (bivalves)

Pinctada nebulosa Conrad- common
Pinctada pallida Conrad- common
Pinctada galtsoffi Bartsch- several
Pedalion alata Gmelin- a few
Atrina (Streptopinna) saccata Gmelin- several up to 8 inches
Pinna muricata Linne'- two
Pinna semicostata Conrad- several

Gastropoda (snails)

Cypraea tigris Linne'- one juvenile

Cirripedia (barnacles)

Lepas anatifera- one live specimen on rudder
Balanus tintinnabulum tintinnabulum Linnaeus
Balanus tintinnabulum zebra Darwin
Balanus tintinnabulum volcano Pilsbry
Balanus tintinnabulum rosa Pilsbry
Balanus amaryllus Darwin
Balanus amphitrite amphitrite Darwin
Balanus amphritrite hawaiiensis Broch

(con.)

Bryozoa (Moss animals)

Crisea sp.- on *Pinctada* shells
Bugula sp.- "

Annulata (worms)

Serpula sp.- on *Pinctada* shells

As nearly as I could ascertain the ship had lain at anchor somewhere in the Hawaiian or Marshall Islands for many months.

There is one beautiful specimen which I have given to Dr. Henry that has all four varieties of *Balanus tintinnabulum* growing on one large specimen. These are all colorful and distinct varieties.

Many ships come into drydock from southern waters to Wilmington, San Pedro etc. Perhaps some of our conchologists in these areas could visit some heavily infested ship bottoms and see what they can find.

Part II

When I was a member ornithologists of the Whitney South Sea Expedition we had our converted Thursday Island pearl lugger over-hauled in the little shipyard at Belisana on China Strait across from Samarai,Papua in 1930. The bottom was heavily infested with aviculid bivalves. I collected the following species of shells.

Ostrea palmipes Sowerby- not common
Pinctada vulgaris Schumacher- common
Pinctada radiata Leach- common
Pinctada pallida Conrad- common
Pinctada martensi Dunker- common
Pinctada (*Meleagrina*) *cumingi* Reeve-a few
Perna anomoides Reeve- common
Perna australica Reeve- common

No other molluscan shells nor barnacles were found. One or two of the *Pinctada* species are probably synonyms. Most of the *Pinctada vulgaris* are young shells not over 1 1/4 inches in length. This is the silver lip pearl oyster.

Most of the shells were named by the U.S. National Museum and by Dr. H.A. Pilsbry. The barnacles were named by Dr. Dora P. Henry, Oceanic Department of the University of Washington. She is a specialist on *Cirripedia*.

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Publications Received

The Journal of Conchology- Vol.24, No.9, 25 February,1959. The papers in this issue are-
The Mollusca of some Cheshire marl-pits; a study in colonization by N.F.McMillan.
Two new subspecies of *Jamina* (*Euchondrus*) *continens* (Rosen) from Iran by L. Forcart.
A monstrocity of *Cyprina islandica* (L.) by Hans Schlesch.
An undescribed polymorphism in *Hygromia striolata* (C.Pfeiffer) by A.J. Cain.
A Check-List of East African non-marine Mollusca by B. Verdcourt. (an announcement of delay in publishing)
Two unusual snail colonies by L.W. Stratton.
Saxicavella jeffreysi Winckworth at Plymouth by N.A. Holme.

Journal of the Marine Biological Association of the United Kingdom, Vol.38, No.1,Feb.,1959.The following papers are of particular interest to us,pertaining in a measure to malacology.
A porphyrin pigment in the integument of *Arion ater* (L.) by G.Y. Kennedy.
Carbohydrate levels in *Patella* by R.J.C. Barry & K.A. Munday
The growth stages of the lophophore of the brachiopods *Platidia davidsoni* (Eudes Deslongchamps) and *P. anomioides* (Philippi), with notes on the feeding mechanism by D. Atkins- pp.103-132,23 figs
A new species of *Platidia* (Brachiopoda) from the La Chapelle Bank region by D. Atkins, pp.133-142, 8 text figs. The new species is *Platidia annulata.*

Correspondentieblad Van De Nederlandse Malacologische Vereniging- L.J.M. Butot, editor.

This publication contains many interesting papers, or perhaps I should suggest interesting subjects. For example the paper on *Conus* obviously discusses some rare species of this popular genus. Unfortunately, your editor's ability to read the Dutch language is so limited that a review would certainly be guesswork.

Fisheries Newsletter- Australia. This monthly periodical has accumulated until I have before me the issues from Sept.,1958 to Feb.,1959. One series of papers running serially is Surveying Australian Pearling Beds by Vernon Wells. This series of articles is quite a travelogue with detailed accounts of pearl diving in many different localities. What a pity Mr. Wells is not a shell collector. In covering all of the diving localities they must have had available the making of one of the world's best collections of shells.

The Cultured Pearl...Jewel of Japan by Norine C. Reese- 1958
This is a beautiful little book- well bound-107 pages and numerous illustrations, some of them in color. For those interested it is excellent. Available from John Q. Burch $2.50

New York Shell Club Notes, NO.48,Jan.1959. - If you are not receiving these it is suggested that you send $2.00 to the editor, Morris K. Jacobson,455 Beach 139 St.,Rockaway Beach 94, New York.

This issue contains a paper by Anthony D'Attilio on the Japanese *Latiaxis* with 3 figures. Well written and a full discussion. George E. Jacobs has a paper titled Glamorous Bivalves. There are others.

Olivella petiolita (Duclos,1835) Chenu,Ill.Conch.,vol.4,p.5, pl.1,figs.21,22
Marrat,1871 ,Thes.Conch.,vol.4,Oliva ,p.23,no.172,pl.23,figs.394, 395,418- Tryon,Man.Conch.,1883,vol.5,p.66,pl.14,figs.61-63- P.P. Carpenter, Rept.,1856,p.231,262-Rept.1863,p.537-
The identity of this species is a question. All collections from the Pacific Coast contain sets so labelled. The discussions will follow.

Tryon,Man.Conch.,p.66, pl.14,figs.61-63. Tryon reproduces Marrat's figures and describes the species, " Yellowish white, fasciculated and reticulated with chestnut-color,and with a narrow chestnut revolving band upon the fasciole. Length 12-18 mill. West Coast of America,from Panama to Mazatlan...Much resembles large specimens of O. mutica Say,var. nitidula from the West Indies; but the markings in the typical specimens are irregularly reticulated instead of zigzag. I unite with it O. intorta Carpenter(fig.62) and O. mica Marrat, not of Duclos (fig.63)." End Tryon quote.

None of the authors before us seem to have mentioned it, but the following species may well be considered here.
Olivalla pellucida (Reeve,1850) Conch. Icon.,pl.27,fig.85,a,b. Reeve describes this species as follows," The Transparent Olive. Shell oblong-ovate,thin,slightly inflated,spire exserted,columella arched,obscurely one-two plaited at the base;transparent horny, neatly painted with undulating brown lines ,columella opake and callous at the base. Hab.? Very pretilly painted with broadly waved red-brown lines upon a transparant ground." End Reeve quote.

C.B . Adams,Cat. Shells, Panama,1852,p.51,no.35 refers to the above species as follows," Habitat- Unknown; Reeve Panama, C.B.A. We obtained one specimen, which is about three-fifths as large as Mr. Reeve's specimen." End Adams quote.

Tryon places O. pellucida Reeve in the synonymy of O. lepta Duclos. Whether or not Adams had Reeve's species is a question, but it is logical to assume that the specimen collected by Adams may be the species under discussion.

Weinkauff, 1878, lists Weinkauff 35,5-8 O. intorta Carp. in syn.
Oliva/ella petiolita , var. aureocincta Carpenter,1857. Cat. Mazatlan Shells,p.470,no.598. Carpenter describes this form as follows, " Comp.O.mutica Say in Rve.Conch.Ic.pl.29,f.93,a,b (Non.O.mutica Ducl. in Chenu,p.6,pl.2,f.5,6: var. f.7,8-= Dactylidea mutica H. and A. Adams, Gen. i,146). .. As it is doubtful whether this shell be either the true O. petiolita or the true O. mutica,a name and diagnosis are added which may rank either as a variety or species,according to further light. On comparing the Mazatlan shells with genuine W. Indian specimens from Dr. Cutting in the Bristol Museum,there scarcely appear grounds of specific separation;the most evident being the infrasutural golden band, the basal fold rather more slanting, and the plaits fainter than in most, but not all of the Caribbean shells. Long. .37,long.spir.16, lat.16,div.50°. Hab. -(O.petiolita) Mexico [?ubi], Duclos.- (O. mutica) Barbados, Dr. Cutting- (O. aureocincta) Mazatlan; very rare; L'pool. Col. Tablet 2186 contains 8 sp. exhibiting the principal varieties of pattern." End Carpenter quote.

Tryon, Man.Conch.,p.66, states of var. aureocincta " Having an orange zone beneath the suture,appearing purplish within the aperture. This zone is probably made up of fasciculations worn yellowish on a beach-rolled specimen. I have not seen an authentic example of it and it has not been figured." End Tryon quote.

(con.)

Having briefly stated the descriptions followed largely by all collectors of the West Coast, we now list the puzzling difference of opinion. If not O. petiolita Duclos , what other name is offered for the species from the Pacific coast?

Keen,Sea Shells of Tropical West America,p.424, states,"Olivella (Olivella) petiolita (Duclos,1835) has been reported from the Gulf of California, but Olsson(1956) considers it a Caribbean form" End Keen quote.

Axel A. Olsson,Proc.Acad.Nat.Sci.Phil,vol.107,1956, p.174 states as follows," Shell moderately large,solid,with a high,conic spire, not fully one half the total length.Sutures grooved and forming a deep,notch-like cut in the parietal callus at the end of the aperture. Parietal callus strong,extending to the suture and forming a whitened enamel-like deposit over the surface of the penultimate whorl.Parietal wall straight,the pillar structure formed by a series of more or less paired lirations which extend upward nearly to the end of the aperture. There is a strong, keel-like fold at the end of the columella bordered internally by the excavation of the pillar wall. Color pattern on the body whorl is formed by coalescing arrow-shaped lines. Fasciole wide,double,somewhat convex with a medial incised line and colored with alternating brown and white bands. An average specimen measures length 18 mm.,diameter 8.5 mm...The above description is based on specimens from the Academy collection labelled " Panama" but without indicating which coast, but they are assumed to be from the Caribbean side.Marrat, however,gives Mazatlan as locality for the species. Other specimens in the Academy collection come from the north coast of Venezuela. In the National Museum collection,specimens of these species from Puerto Rico and other Caribbean localities are identified as O. esther Duclos.No locality is given by Duclos for his figure of esther. H is small sized figure (reproduced by Marrat) is shown as having a deeply concave pillar wall and may possibly represent a species of Callianax, Range.- West Indies and the Caribbean region along the coast of Venezuela westward to Panama." End Olsson quote.

Distribution of the species assigned to O. petiolita (Duclos) from the Pacific coast of North America. The following will mention a few such sets of shells. California Academy of Sciences, No.29909, Mazatlan,Sinaloa,Mexixo. The George Willett collection, now in the collection of the University of California at Los Angeles contains a set assigned to petiolita from off Catalina Island, California. Mr. E.P. Chace, Curator of Mollusks, Natural History Museum of San Diego , made the following list and observations on some of the sets in that institution as follows," O.petiolita (Duclos)- A.M. Strong, off Newport,Calif. 2 specimens; H.N. Lowe, San Juan del Sur,Nicaragua, 2 specimens- Tres Marias Islands, Mexico, 5 specimens- Mazatlan,Mexico, 13 specimens; var. aureocincta ex Fred Button, 6 specimens; O.petiolita var. aureocincta ,Gulf of California, Dr. Fred Baker; another set labelled Gulf of California, Dr. Fred B aker (this lot look different- dark brown spires and tiny brown spots on the creamy bodywhorl); Another set marked O. petiolita , Mazatlan,H.N. Lowe. Much larger than others; N ote- Dr. Olsson states that O. petiolita is 18 mm. in length- none of the specimens in the above lots are over 10 mm. and most of them smaller. I fail to find the name petiolita in any of the earlier lists of East Coast shells. Dall in M.C.Z.-Johnson's list in 1934. M. Smith East Coast Shells...Have a set of O. mutica Say from Key West that are very similar to W.C. shells labelled O. petiolita. " End Chace quote. (con.)

It is obvious that we are in need of advice on the O.petiolita problem. It is obvious also that the diagnosis of Dr. Olsson indicates a very different concept, and we no doubt have two species or more to consider. We hope to have some further reports.

One key is that Olsson places Olivella esther Dall and Simpson, 1901,U.S.Fish.Comm.Bull for 1900, vol.1,p.392 in his synonymy of O. petiolita (Duclos), a dding (Not of Duclos,1835).

Among the brief comments in Thes Conch. appears the following " 172. petiolita Duclos (f.393,394,418) Of a narrower form and different color from O. esther; nevertheless a very close species. 171. esther(f.392) Duclos, The figure of the colored shell is copied from Duclos. O. columba Duclos is probably a variety of the next species (O. petiolita)." End quote from Thes.Conch.

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Olivella esther (Duclos,1835) Mon.Oliva,pl.3,f.7,8

Reeve,Conch.Icon.,pl.23,species 65,a,b, describes the species as follows," The Esther Olive. Shell ovate,thick,stout,spire rather short,columella arched,obscurely many-plaited,callous at the upper part; white,irregularly waved,scarcely reticulated,with numerous pale brown lines,with a narrow chestnut band at the base,columella and interior of the aperture white. Hab.--?" End Reeve quote.

Tryon,Man.Conch.,p.66, pl.14,figs.65,66 states," Shell heavy, with short spire, and strong callus on the upper part of the columella. Yellowish white,fasciculated with chestnut at the suture,with a chestnut band upon the fasciole, and minute longitudinal zigzag markings of the same color upon the body whorl. Length, 6 mill. Habitat unknown. ..A short heavier form than O.petiolita ,judging from the figure, yet doubtfully distinct: the shells usually known under this name are certainly O. petiolita. O. columba Duclos (fig.66),may be considered an uncolored variety of this species." End Tryon quote. Tryon reproduces Duclos' plate, (fig.65).

Weinkauff,1878, gives more or less the same diagnosis other than placing O.columba Duclos, non Marrat in the synonymy, and gave as locality " Sudsee-Inseln".

We do not know this species.

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Olivella tergina (Duclos,1835) Mon.Oliva,pl.2,figs.13-16 Menke in Zeit. f. Mal.1847,p.183,no.24- do. 1851, p.25, no.107- Reeve,Conch.Icon.,vol.6,Oliva,pl.26,figs.86,a,c- P.P. Carpenter, Cat.Mazatlan Shells,1857,p.469,no.596-do. Rept.1856,p.234,236,239, 292- Ducros,1857,Revue Crit. de Genre Oliva,p.91- Marrat,Thes. Conch.,1871,vol.4,Oliva, p.33,no.173,pl.23 (350),figs.395-398-. Weinkauff,1878, Die Gattung Oliva ,Syst.Conchy.Cabinet,p.118,pl.31, figs.5-8-Tryon,Man.Conch.,vol.5,1883,p.66,pl.14,fig.67- Proc.U.S.N.M. vol.37,p.211-Zetek,Panama List,p.526-Proc.Acad.Nat.Sci.Phil.,vol.84, p.113- Smith,Panamic Marine Shells,fig.448a- Keen,1958,Sea Shells Trop West Am.,p.425,fig.638- Olsson,Proc. Acad.Nat.Sci.Phil,vol.107, p.177,pl.9,figs.4,4a.

Reeve,Conch.Icon.,pl.26,Sp.80,as follows," The Hide Olive.Shell oblong,rather swollen,thick,truncated at the base,spire exserted, callous,columella arched,slightly excavated,callous at the upper part,plaited obliquely neneath; yellowish-white or cream color, thickly reticulated with brown or blue brown,the spaces being sometimes interrupted,spire and basal zone unspotted,columella and interior of the aperture bluish white. Hab. Conchagua,Central America (on sand banks);Cuming...Distinguished mainly by its callous growth and dense splashy pattern of net-work." End Reeve quote

(con.)

P.P. Carpenter,Cat.Mazatlan Shells,1857,p.469,no.596 discusses as follows, " Olivella tergina (Duclos)- This appears to be the common Olive of the Mazatlan fauna, as O. volutella is of that of Pana Panama. The latter was abundant in the S.W. Mexican collection ; but (as far as authentic information is concerned) is entirely unknown in the Gulf district/ The great bulk of the specimens are sufficiently constant in characters to be easily recognized,having gray marking on a light ground;but these often assume a fawn or orange tint, or on the other hand a rich purplish brown, and are sometimes absent altogether. The dried animals, which were abundant and easily softened, gave no token of opercula. The West Indian analogue is O.conoidalis.An acuminated specimen measures long. .72 long.spir .33 lat. .28 div.50°-a broad sp. long..66,long spir .29, lat..32,div.50° (Note-Carpenter did not use millimeters). The difference of divergence is in the lat~~t~~er ,not the earlier whorls. H ab.- Conchagua; on sand banks; Cuming- Mazatlan; in extreme profusion; L.'pool & Havre Coll...Tablet 2170 contains 8 sp. uniform,light passing into dark orange.- 2171 7 sp. do. with slight markings.-2172 15 sp. light passing into dark flesh color,nearly uniform- 2173 15 do. with slight markings- 2174 do markings richly developed-2175 15 sp. darker shade, markings faint- 2176, 15 do markings developed-2177 15 do. orange passing into grey- 2178, 8 sp. light to dark brown-2180, 15 sp.changing to rich, nearly uniform,purple brown,with dark spire. Normal state. Tablet 2181 contains 8 sp.light shade-2182, 15 do.ordinary state.-2183, 15 sp. zigzag pattern developed-2184, 15 sp. spire dark." End Carpenter quote.

Tryon,Man.Conch.,p.66,pl.14,fig.67, " Marked like O. petiolita but more vividly; distinguished from it by its swollen,blunt spire, and by being somewhat more effuse at the base. Length 12-15 mill. Acapulco,Mazatlan." End Tryon quote.

Keen,Sea Shells of Tropical West America,p.425, 1958, fig.638, " (Synonym: Olivella salinasensis Bartsch,1928) A narrowly ovate shell with a color pattern of gray or yellow blotches,and arrow-shaped white markings edged with brown. The small nucleus projects conspicuously from the rounded spire. About 16 mm. in length. Magdalena Bay, Lower California, and Mazatlan,Mexico to Zorritos, Peru." End Keen quote.

A.A. Olsson, Proc.Acad.Nat Sci.Phil.,vol.107,p.177,pl.9,figs.4,4a " Shell narrowly egg shape,the length up to about 18 mm. The spire nearly half the length, is full,its whorls flat to slightly convex. Protoconch small,glassy,elevated or slightly projecting.Sutures are narrowly grooved. Color pattern is fairly cpnstant,mainly in tones of gray or yellow with arrow-shaped blotches of white edged with brown,these markings being largest in a zone encircling the whorls just above the end of the aperture.The spire whorls are white or yellow,the suture margined by a band of frilled brown lines.Pillar structure consists of several (6 or 7) rather strong lirae which extend along the parietal wall nearly to the end of the aperture. This fine species is moderately common along the Ecuadorian coast. Its color pattern in quite constant in most specimens seen, but the general shade of color mat vary from gray,brown to yellow.The shape of the shell is elongated egg-like, the small nucleus elevated and projecting in a peculiar fashion. A faded beach specimen from Santa Elena was described by Bartsch under the name salinasensis. Range-Peru to Lower California. Peru: Zorritos, Ecuador: Santa Elena,Manta Panama: Vedado Beach. Pearl Islands." End Olsson quote.

Distribution- sets noted- Burch collection, large sets from Magdalena Bay and Mazatlan- Stanford University coll. #37600 Paita Bay,Peru-37354 Manta,Ecuador; Calif. Acad Sci.- #942 Nicaragua, Hemphill coll.-17946A,Piedra Blanca Bay,Costa Rica ;San Diego Museum- Mazatlan, Tres Marias Island etc. H.N . Lowe coll.

Olivella bitleri Olsson,1956 Proc.Acad.Nat.Sci.Phil.,vol.107,p. 178,pl.15,figs.4,4a.

This is an interesting species because of the fact that it may so easily be confused with O. volutella . The description of the author follows," Shell of medium size (length up to about 16 mm.), with an elevated sharp spire about half the total length. Whorls about 8, of which the initial 2 belong to a small glassy nucleus.Sutures grooved,the bordering edge of the whorl in front,sharp and slightly overhanging. On the type, the parietal callus is colored a rich brown ad extends upward past the end of the aperture but not quite reaching the suture, the callus being thickest at the end of the aperture and just above it, the general surface of the penultimate whorl being covered and colored by its enamel. Coloration variable; the type has the body-whorl between the suture and the fasciole a steel-gray which forms a broad band between the deep,rich brown of the penultimate whorl above and a narrow brown band below which colors the upper band along the fasciole; other shells have the surface colored a light-brownformed by a sprinkling of small spots. Upper band of the fasciole usually brown,the lower part white.Sutures edged below with a lightercolored zone with small,broken brown lines. Interior of outer lip a dark brown. Radula typical of the subgenus, the ribbon of medium length, with about 28 rows of teeth, the rachidian tooth with about 20 cusps, the central pair largest and in the specimens examined, the central pair of cusps have 2 secondary ones between them. Langth 15.2 mm.,diameter 5.8 mm. Holotype, ANSP,194586." " ..In size and general coloration, this species might easily be mistaken for Olivella volutella (Lamarck) but closer inspection will show that it has the pillar structure of true Olivella .The radula is also of true Olivella ,the rachidian tooth having the central pair of cusps greatly enlarged. Our shells were received from Capt. W.S. Bitler, U.S. Navy formerly stationed at Balboa,who has contributed substantially to our knowledge of the Panama fauna by his extensive collecting. Panama,Panama Bay." End Olsson quote.

Keen, Sea Shells of Tropical West America, 1958, p.424, fig.632, states, " The coloration is variable, mostly in shades of dark brown, and much resembles that of the common O. (Lamprodoma) volutella , from which this species is distinguished by the cutting off of the inner ends of the columellar lirations. Length 15 mm.; diameter 5.8 mm. The species was described from Panama Bay.Specimens in the Stanford University collection extend the range to the Gapapagos Islands; rare." End Keen quote.

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It was our priviledge to examine the set of Olivella bitleri in the collection of Stanford University, No. 1898, from Iguana Cove, Albemarle,Galapagos Islands.

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Olivella broggii Olsson,1956 Proc.Acad.Nat.Sci.Phil.,v.107,p.179, pl.9,figs.5,5a.

The description will not be repeated here, but the author's comments follow. We have seen no specimens of the species.

" Related to Olivella tergina ,this species is distinguished by its more eliptical shape,coloration, and in details of its pillar structure. As far as present records indicate,the species seems limited to northwestern Peru. ..Range- Northwest coast of Peru. Bayovar.Mancora.Zorritos." End Olsson quote.

The author placed the species in the subgenus Olivella.

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Olivella cocosensis Olsson,1956 Proc.Acad.Nat.Sci.Phil.,p.180,pl. 14,figs.9,9a.
The author states of this species," Similar to O. gracilis in color and general characters but much smaller (specimens in the type lot not exceeding 11 mm., the spire shorter,its whorls more heavily calloused .... Clatham B ay, Cocos Island. Holotype ANSP 155004." End Olsson quote.
Specimens in the Stanford collection extend the range to Nicaragua. Keen, Sea Shells of Tropical West Am.,1958,p.424,fig.633.

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Olivella drangai Olsson,1956 Proc.Acad.Nat.Sci.Phil,v.107,p.180, pl.15,fig.7.
The complete description will not be repeated here. Comments of the author follow. Placed in the subgenus Olivella.
" Length 10 mm.,diameter 3.9 mm. type. (Holotype,ANSP,194581) Resembles O. floralia of the Atlantic coast of the United States but with a stouter, less attenuated spire. Range--Galapagoa Islands. Galapagos: Dredged in 5 fms. Bahia Wreck,San Cristobal Island (Ted Dranga)." End Olsson quote. We have seen no specimens.

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Olivella rehderi Olsson,1956 Proc.Acad.Nat/Sci.Phil,vol.107,p.180, pl.10,fig.7.
The description will not be repeated here. We have seen no specimens. Comments of the author follow," Length 7.7 mm, diameter 3.3 mm. Holotype, USNM 96799). There is some variation in contour from relatively stout to more narrow. Somewhat similar in shape to O. alba but with a thinner shell, a more reduced pillar structure, and different coloration. Color nearly white but with a pattern of brown spots and flammules showing faintly in the species at hand. Bay of Panama, sta. 2799, U.S. Fish Comm. in 30 fms. USNM 96799. Probably Santa Elena,Ecuador." End Olsson quote.
Keen, Sea Shells of Tropical West Am.,p.424,fig.636.

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Olivella riverae Olsson,1956 Proc.Acad.Nat.Sci.Phil.,vol.107,p.179, pl.10,figs.4,4a.
The description will not be repeated here. Author's comments will follow. Placed in subgenus Olivella. " Length 12.7 mm., diameter 5.1 mm. (Holotype,Zorritos,Peru. ANSP 194583) A relatively rare but seemingly widely distributed species, ranging from northwestern Peru to Costa Rica. Its beautiful deep, mahogany-brown color dis--tinguishes this species easily from its associates. ..Peru:Zorritos Costa Rica: Islas Tortugas, Gulf of Nicoya,Costa Rica (collected by Mr. Ted Dranga,1952. Dr. Jeanne Schwengel Coll." End Olsson quote.
Keen,Sea Shells of Trop.West Am.,p.424,fig.637.

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Olivella morrisoni Olsson,1956 Proc.Acad.Nat Sci.Phil.,vol.107, p.192,pl.15mfigs.3,3a. Placed in subgenus Niteoliva.
The description will not be repeated here. Author's comments follow. " Length 9.2 mm, diameter 4.4 mm.- Length 9.4 mm.,diameter, 4.4 mm. Types. U.S. National Museum, no.587797.San Jose Island, Pearl Islands, Panama. Coll. J.P.E. Morrison, 2-19-1944. From sand near tide line near Marina mouth on East Beach." End Olsson quote.
Keen,Sea Shells Trop West Am.,1958,p.426,fig.642 states," The small shell has a heavy callus on the inner lip and a smooth outer lip. The shell is dull white with coarse dark brown zigzag markings. ..Type locality is the Gulf of Panama, but specimens in the Stanford collection ..extend the range northward to San Blas,Mexico. Rare."

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Publications Received

The Nautilus, Vol.72, Bo.4, April,1959. The following papers are contained in this issue.
Infestation of *Pecten irradians* by *Polydora* by Harry J. Turner Jr. and James E. Hanks
A new operculate land snail from Haiti by Oscar Alcalde and Morris K. Jacobson. *Crocidopoma (Crocidopoma) zayasi* n. sp.
A new *Spiraxis* from Guatemala by Fred G. Thompspn. *Spiraxis (Pseudosubulina) splendens* new species.
A new *Oocorys* from Japan by Tadashige Habe and Masao Azuma. *Oocorys tosaensis*, species nova.
Notes on the crown conch, *Melongena corona* by David K. Caldwell.
Land snails of Carrol County, Maryland by Wayne Grimm.
Range extensions of some N.A. marines by R. Stohler.
Self fertilization and production of young in a sphaeriid clam by Grace J. Thomas.
Notes on *Odostomia impressa* by Harry W. Wells.

Journal de Conchyliologie, Vol. XCVIII-n.4, Dec.1958.
Cantharidus (Jujubinus) strigosus (Gmelin) - new species to the fauna of France. by P.S.Kisch
Habitacles de Patelles Creuses Sur le Test D'Autres Patelles by P.H. Fischer and B.S. Kisch
The internal lamellae in the shell of *Biomphalaria pfeifferi gaudi* (Ranson) from Ghana, West Africa by Fergus S. McCullough
The anatomy of *Tropicorbis philippianus* (Dunker) and its relationships to the Brazilian Planorbidae by F.S. Barbosa, I. Barbosa and E. Carneiro.
Remarques Sur la butte de coquillages de Saint-Michel en L'Herm, by P.H. Fischer.

The Land and Freshwater Mollusca of Rennell Island, Solomon Islands by William J. Clench- Danish Science Press, Copenhagen, Dec.,1958. pp.155-202,4 plates.

The Ecology of *Conus* in Hawaii by Alan J. Kohn, Ecological Monographs, 29:47-90, Jan.,1959.
An excellent and very interesting work on the ecology of the species discussed. The detailed study of the food, the prey of each and the method of attack etc. will make this work a genuine contribution.

The Los Angeles Times, for Sat., April 4.1959 contained an article with the popular headlines " Scripps Ship Finds "Living Sea Fossils". Nevertheless, the article is of genuine interest in that it is an account of the dredging of 3 additional specimens of *Neopilina galathea* Lemche in deep water off Cape San Lucas.

Dr. Henning Lemche of the Copenhagen Zoological Museum was aboard the Baird at the time.

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The Pacific Division American Association for the Advancement of Science, 40th Annual Meeting, will be held at the San Diego State College, San Diego, Calif. June 15-19,1959.

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After a perusal of the fairly serious efforts mentioned above, JQB finds himself musing. How many persons will read this far, or for that matter care to read the periodicals discussed. It is refreshing to stop and think that, " There are 70 magazines on astrology, one on astronomy."

Conchological Club of Southern California- Minutes- April 7,1959 --The meeting was called to order at 7:35 P.M. by the president Dr. Donald Shasky. There were 57 members and guests in attendance. The minutes of the March 3 meeting were approved as read. Prior to the introduction of the speaker, program chairman Crawford Cate reported that one of Dr. Boolootian's students had sighted a sea otter off Malibu two or three weeks ago. Dr. Boolootian in reporting on sea otters at the March 3 meeting , had found them only as far south as Point Conception.

Mr. David Leighton, guest speaker for the evening, graduated from Pomona College with a major in geology in 1954, and went directly into military service. After his tour of duty he enrolled at UCLA where he is currently studying for his masters degree in invertebrate zoology. He chose the black abalone,*Haliotis crachrodii*, for his masters problem and has been studying its growth with relation to diet during the past year. He reported that in the past black abalones have been considered primarily diatom feeders; however, his experiments were designed on the assumption that they would be feeding on macroalgae. In order to determine the amount of growth per amount and kind of algae ingested it was necessary to set up field as well as laboratory experiments. Field stations were established at Palos Verdes where the algal growth is quite sparce and at Point Dume where algae grow in lush profusion. At Marineland of the Pacific ,two tanks were made available for experimenting. One of these was used as a control tank for growing algae and the other was used for the abalone feeding experiments. In addition,starvation experiments were also conducted on the black abalone. Four kinds of brown algae(*Egregia laevigata*,*Pelvetia fastigiata*,*Macrocystis pyrifera*, and *Eisenia arborea*), four kinds of red algae (*Gigartina canaliculata*,*Gelidium cartilagineum*,*Gelidium purpurascens*, and *Gigertina spinosa*),and one coralline alga (possibly *Bossea dichotoma*) figured heavily in the feeding experiments. It was pointed out that many of the various kinds of algae eaten are digested quite rapidly (most brown algae and a few of the reds) while others (corallines) are almost completely unaffected. From the point of view of weight gained to quantity of seaweed consumed,the giant kelp,*Macrocystis pyrifera*, was found to be tops. Below giant kelp in descending order of nutritional importance were *Gigertina canaliculata*,*Pelvetia fastigiata*,*Eisenia arborea*,*Gigertina spinosa*, and *Egregia laevigata* . The shells grew well on a diet of *Egregia* but the overall weight increase of the abalone was poor. *Gelidium* and surf grass,*Phyllospadix* sp. (not an alga but a flowering plant) showed low nutritional value or none at all.The weight drop on a diet of these latter two was about the same as noted for the starvation curve. Although there is a probability that black abalones take some food according to their dietary needs there was a definite order of preference when offered all species of algae at the same time. First choice was *Egregia laevigata*, a species rather low in nutritional value. Second in order of preference was *Gigartina canaliculata* with high nutritional value.This in turn was followed by *Pelvetia*,*Eisenia*,*Gigartina spinosa*,*Macrocystis*,*Gelidium purpurascens*,*Pterocladia pyramidale*,*Phyllospadix*, and coralline, in that order. In the field, a difference was noted in the condition (weight vs length) of black abalones at Palos Verdes compared to those from Poine Dume. Those from Palos Verdes showed evidence of starvation and at no time was there any evidence of gonadal maturity. The Point Dume animals appeared to be in a healthy state and some were mature every month of the year.The main spawning season was determined by sectioning the gonad and (con.)

determining the ratio of hepatic tissue to gonadal tissue.November, December and January were the obvious low points of spawning while the peak occured in mid-summer,although some spawning undoubtedly t takes place from April to September. Length at first spawning appeard to be just under two inches when the black abalone is probably two years old. A lively ovation was given the speaker upon completion of his discussion.

As the next order of the evening Dr. Shasky brought three lots of *Eupleura* sp. to the attention of the group. These three lots were collected intertidally at Puerto Penasco,dredged in 4 to 6 fathoms off San Felipe and hauled up from 30 fathoms off Guaymas. There were apparent differences for which no explanation is obvious at the present time.

Crawford Cate briwfly explained the exceptionally fine display of world *Haliotis* and pointed out that at various times during the past century it has been estimated variously that there are 60 to 150 recognizable species of *Haliotis* throughout the world. The exact number is not known but probably lies somewhere between these two figures. The greatest number of species is found in the Australian area which is probably the center of their origin.

Emory Chace had brought several large shells of *Haliotis sorenseni* and Fr ed Mucke displayed a fine collection of shells from the Gulf of California. A smoking break was declared from 9:05 to 9:20 P.M., after which the Constitution Committee's final draft of the revised constitution was read by Dr. Gregg. It was moved by Dr. Gregg and seconded by George Kanakoff that a copy of this draft be incorporated into the minutes of the meeting for action by the membership at the May meeting. The motion was unanimously approved.

Letters were read from several individuals who wished to exchange shells for shells, shells for Dr. Myra Keen's book,money for shells etc. An invitation was extended by John Fitch to attend the AMUPD meeting at Redlands July 9-12. Dr. Shasky requested that everyone who has collected at Puertocitos pool their lists of species and collectively work out a checklist for the area. Such a check list w would be extremely helpful to all. Several people reported upon field trips they had recently made: C.E. Davis to Puertocitos for four days, Fred Mucke to Puertocitos and San Luis Gonzaga, Drs. Bruce Campbell and Donald Shasky to San Felipe and Puertocitos, and Reverend R. Breitigan to the Hawaiian Islands. Elsie Chace asked for everyone going to Puertocitos to be on the look out for *Pseudochama inermis* and called the attention of the group to the sixth known specimen of this rare species brought in by Emory Chace from that locality. George Kanakoff brought in the complete records of the Lost Operculum Club and pointed out that between Jan. and June, 1950, some 150 items were registered. In going over these he found that many were considerably larger than had ever previously been reported;many otheres represented range extensions. Several nice shells were entered into competition by some of the members.

John Burch gave a timely report on several recent publications of both general and specific interest, and Dr. Gregg called attention a a publication called " Sea Frontiers." This report was followed by a lively discussion of the attitude of the Calif. Dept. of Fish and Game toward mollusk collecting, law breaking, etc. John Fitch, while extremely synpathetic with misinformed shell collectors,pointed out that the much maligned Dept. is in no way responsible for enactment of the laws it is required to enforce. John Burch was fortunate enough to have been the 52nd person to sign in and ,as a result, won a fine door prize. The meeting was adjourned at 10:20 P.M.

John E. Fitch, Secretary.

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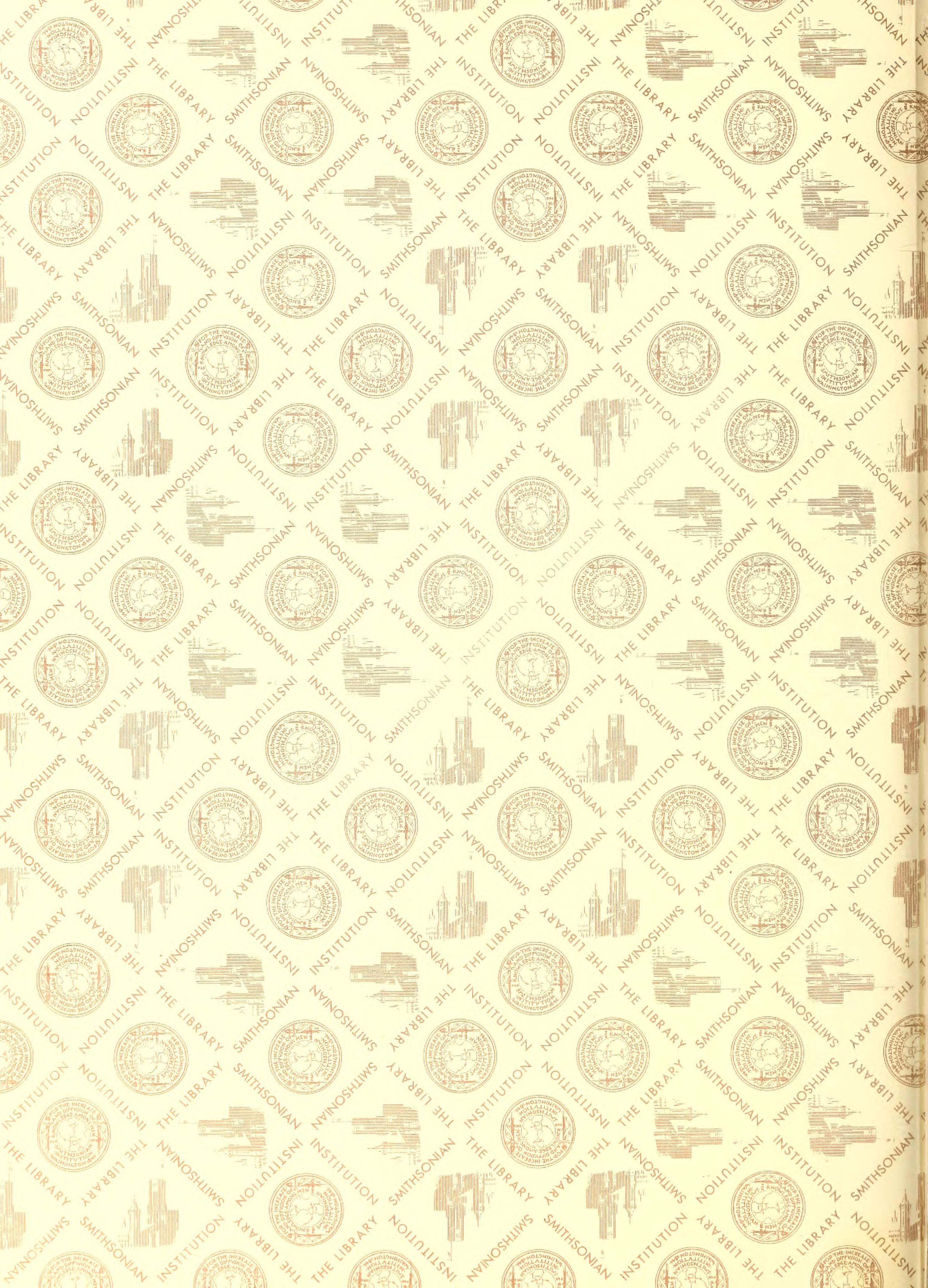

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